THE

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THE

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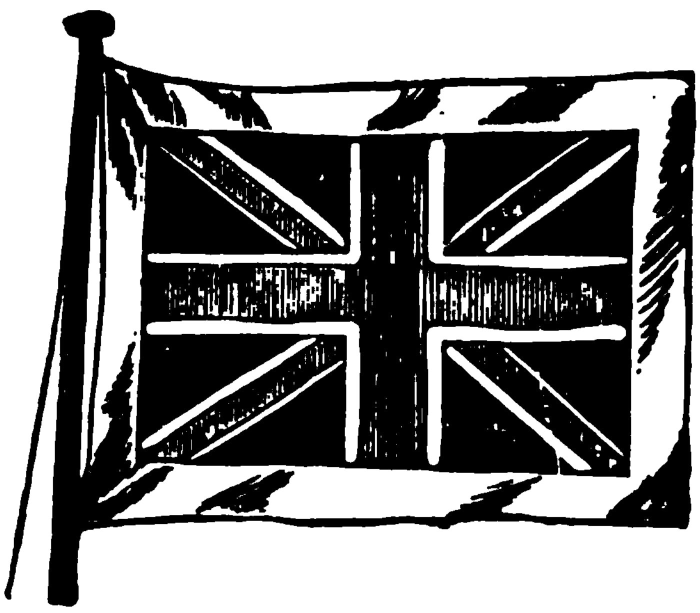
Magazine



AND

NAUTICAL RECORD.

VOL. I.

JANUARY TO DECEMBER, 1854.

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NAUTICAL RECORD.

JANUARY, 1854.

INTRODUCTORY ADDRESS.

It has been frequently remarked of late that there is ample room for an efficient and ably-conducted Periodical devoted to the interests of the Mercantile Marine of the United Kingdom, and that a Magazine bearing on the immediate requirements of the Merchant Service,—supplying all recent information and recording the most important events connected with it,—would meet with considerable support.

The Proprietors of The Mercantile Marine Magazine, while responding to these representations, and being desirous of supplying an acknowledged want, have also the satisfaction of neither interfering with, nor supplanting any existing periodical; and in calling the attention of Nautical Men and the Public generally to the present undertaking, they think it necessary to define as briefly as possible its aim and scope, which they trust will be deemed of sufficient importance to secure a favourable reception.

Whatever ameliorates the condition of a seafaring life—everything that promotes the welfare of the Seaman, together with whatever is of value to him in the various departments of Science and Art, will receive careful consideration in the pages of this work.

It is intended from time to time to notice the progress of the different branches of Naval Architecture, and to record and discuss all improvements in Machinery, whether introduced to facilitate navigation or economise labour. Rapidity of transit being one of the great questions of the day, as essential to the life of commerce, it will be necessary to collect all information which can be instrumental in accomplishing an object so desirable as the abridgment of time and space; to this end, therefore, every thing useful concerning the numerous routes traversed by vessels from port to port will be judiciously selected, and an abstract of the peculiar features of each route arranged in such a manner as to serve for reference. It is allowed that the knowledge of Meteorological and Oceanic Pheuomena has not reached the standard which the many facilities for acquiring it would warrant; to supply this deficiency,

more extended observations on the Law of Storms—on the nature and limits of the periodical and variable Winds—on Tides, Currents, &c., are at the present time particularly requisite, as there is every reason to anticipate that a history may be deduced from them pregnant of momentous results alike to navigation and general science. The subject of Local Attraction and the Adjustment of the Compasses of Iron Ships and Steamers,—the registry of Rocks and Shoals, and other Maritime Discoveries,—Harbours of Refuge,—the erection and efficiency of Lighthouses,—the establishment of Life Boats,—and the position of Buoys and changes in the condition of Channels will demand attention as connected with the preservation of life and the general safety of vessels. The capacities of Harbours,—the great centres of Trade,—and the opening of New Markets, together with much other matter interesting to the Seaman will receive extended notices as occasion offers. The valuable assistance of science, combined with observation and experience,—all that is at once *practical, useful*, and *beneficial*,—will be constantly kept in view; never forgetting that the extension of the Commerce of the Country and the maintenance of the character and efficiency of the Merchant Service go hand in hand.

On the whole the intelligence will be of a varied cast, especially intended to arouse a spirit of inquiry where *that* is dormant, and stimulating others to continued research and careful investigation of all that may benefit navigation and promote science.

In collecting the information and arranging the materials necessary to render this Magazine a work of reference, as well as of general interest, neither expense nor labour will be spared; and in the discussion of public subjects they will be examined and criticised fearlessly, without regard to particular interests or prejudices.

New and improved Charts will be duly announced, and Books relative to Nautical Affairs reviewed and brought to the notice of Seamen.

Contributions and Correspondents will, at all times, receive that prompt attention which the nature of the communication demands. Valuable assistance has been already proferred, and the Editorial arrangements are such as it is anticipated will procure a wide circulation.

The Proprietors do not pledge themselves to any prescribed limits in the future, but at present it is intended to publish THE MERCANTILE MARINE MAGAZINE on the first day of every Month—40 pages, price Sixpence. The December Number, with copious Index and general Summary of the year, One Shilling. Should it eventually become the wish of Subscribers the Magazine will be enlarged.

METEOROLOGICAL OBSERVATIONS AT SEA,

WITH ESPECIAL REFERENCE TO THE PROPOSED SYSTEM OF MARITIME CO-OPERATION.

IF it be true that "man is a meteorologist by nature," it is no less true that "the mariner is a philosopher by profession." Every person is more or less interested in the changes and vicissitudes of the weather, and they on the other hand exert a very decided and unmistakeable influence on the interests of every individual member of the human family, but it is the philosopher who *observes* and *records* the appearances and changes that the weather unceasingly presents; these records he assiduously gathers up, arranges, combines, and examines. The *discussion*, to use a technical term, to which these records have been submitted furnishes *results* which are employed in the case of the seaman to shorten his voyage, to secure him from danger, to announce to him where he may sail with advantage, and where he is likely to meet with detention; in a word, the philosophical observations of a Commander in the Navy or the Mercantile Marine, cannot fail, in the hands of a competent and judicious staff of *reducers*, greatly to improve navigation and facilitate the commercial intercourse of nations.

But man is destined for a higher, a far nobler object than even commercial enterprise. The shortening of a tedious voyage by one third is a step gained of no ordinary advantage, yet that very step in the estimation of a mind which seeks to understand "the course of the winds in his circuits," leads, as it has done, to the apprehension of the working of the most perfect steam engine in the world. The right-minded mariner *sees* in the winds that waft him to his desired haven but a portion of that circulation of the atmosphere which contributes to the maintenance of life, health, and commercial activity over the vast surface of the globe. He penetrates, as it were, to the secret springs from which the "bottles of heaven" are replenished, until they scatter fertility over the face of the land, causing it to smile with gladness, yea, even "the little hills to leap with joy." He tracks the life-giving rain as it ascends from the Southern Atlantic and Indian Oceans, drunk up by the dry and thirsty trade wind, which ever and anon fans those oceanic surfaces, urging on his vessel by its perennial freshness, until he is becalmed just at that point where the wind has satisfied itself with moisture, and ascends, laden with its rich treasure, to pursue its course over the north-east trade,—which also has drunk up the vapor, to irrigate the southern lands;—and then to descend to enliven the face of a great expanse of land in the northern hemisphere, to "water the ridges of this land abundantly, to settle its furrows, and to make it soft with showers," yea, even to temper its very winters, and render those portions of the globe that otherwise would be cold, sterile, and desolate, a fit habitation for the large mass of mankind congregated there.

The occupation of the seaman divides itself into two distinct departments; he necessarily *observes* and *records*, this he does pro-

fessionally; but he may *examine* and *discuss* the facts he has recorded, and it would be indeed an extraordinary instance if the facts even of a single voyage were to turn out destitute of *results*. We have many striking instances, more especially connected with the "Law of Storms," in which a few facts gathered up on the passage of a ship through a hurricane, have yielded most important and valuable results. We have no wish to depreciate the efforts now making in certain quarters for the attainment of a uniform system of meteorological observations at sea, but we do consider that while co-operation is essential for that enlarged view of meteorological phenomena that will enable us to embrace, as it were, in a comprehensive glance, the great system of atmospheric circulation, it is still but *individual* exertion that attains this glance. In all systems of co-operation there must be *one* directing mind, and as that directing mind is enlarged or otherwise, so will the result of the system of co-operation be valuable or comparatively valueless. The history of the very system we refer to is a case in point; it is the enlarged views, the directive energies of the officer of the United States' Navy who first planned, and who has since so efficiently worked out the idea of submitting the observations and records of seamen to a most searching and rigorous discussion that has led to the important results obtained. Had it not been for his *individual* efforts we should at this moment have lacked the valuable information which he has given us. Every seaman therefore, as time and opportunity shall serve, may examine and discuss *his* own observations; he may obtain partial results confirmatory, or otherwise, of those already announced to the public, and he may even contribute to the advancement of our knowledge by looking at his observations from a point of view and in an aspect that would perhaps *not be contemplated* by the directing mind who presides over the associated system, and should this be done his observations will still remain quite as valuable for the purpose of combining with others and obtaining from the whole the results arising from co-operation.

The object of observations at sea is, as already hinted, two-fold, the first, and perhaps the most interesting and important to the mariner, is the bearing of the results obtained on his professional avocations, to these we have already alluded. The second is of a higher character, it possesses a scientific value, and in this sense nothing is too insignificant for the seaman to notice; whatever may strike him as remarkable a note of it cannot fail to be valuable. The truly scientific man will not depreciate the slightest effort of observation, though it be in noticing the color of a leaf or the opening or closing of a flower; it is not what one particular cultivator of science may desire to have observed that is to guide the observer, it is his own deep sense of what is a natural phenomenon, combined with his knowledge of physical or other forces capable of producing such a phenomenon. Nor is the last-named knowledge essential to constitute a good observer, he may be ignorant to a great extent of these forces, and yet he may furnish, independently of any specific instructions he may have received, the most valuable information. The seaman who remarked that yellow was the predominant tint of tropical flowers, recorded a phenomenon of high interest, both to the botanist and chemist.

Bearing in mind the two-fold character of the occupation of the seaman, and the high scientific bearing and interest of the facts he may record, and the investigations *he* may conduct, as well as their immediate influence on his professional engagements; we shall, in the following remarks, solicit the attention of the mariner to such observations that in the present state of meteorological science it appears desirable should be made, both as regards the great object of marine co-operation, now so successfully set on foot on the other side of the Atlantic; and any investigations that may be instituted, having reference either to questions of a more restricted interest, resulting from the private views of the observers themselves or others, that do not appear to be included in the great systems of co-operation now in progress.

The Conference recently held at Brussels had in view the establishment of a *uniform* system of marine observations, so far as the views of the respective governments *might* permit. In the course of this Conference great stress was laid on *instrumental* observations, especially with regard to the index or other errors appertaining to the instruments employed. We are fully aware of the great value of observations made by *competent* persons with *compared* instruments. Such observations, as remarked by an eminent astronomer, are beyond all price. We cannot agree with a sentiment expressed about two years since, that "instrumental observations are too much insisted on," nor can we fully fall in with the idea that "when excellence is not attainable, they are better dispensed with;" at the same time we most cordially agree with the statement that "the remarks of an observant man, recorded at the time with due advertence to day and hour are invaluable."

"Better lose part than all," is an adage that will apply with considerable force to the quotations just made. It may be all very well in fixed observatories to employ instruments of the most delicate construction, to determine their index errors to the thousandth of an inch, in fact the requirements of modern science demand such instruments, and with certain modifications our ships of war may and ought to be furnished with compared instruments, by which the values of the meteorological elements may be determined with considerable nicety. The intention expressed by the Lords Commissioners of the Admiralty of giving instructions for meteorological observations to be made throughout the Royal Navy, is a step in the right direction, and indicates that our own government is more alive to matters of this kind than it was six years since, when a series of meteorological observations on board our ships of war in the Mediterranean was applied for to elucidate an inquiry bearing intimately on our maritime interests. The applicant learned that the observations could not be made simply because the vessels in our navy were not supplied with barometers. About the same time a somewhat similar plan to Lieut. Maury's was suggested, for encircling the globe with a network of meteorological observations, by means of the naval and military services of this country, but it met with no encouragement, except perhaps the instructions issued by the Admiralty in the year 1849, may be regarded as the first step in this direction. When however we turn to the

Merchant Service, we find a body of men characterized by considerable intelligence and great skill in their profession, combined with an amount of perseverance and energy rarely to be met with elsewhere. Many of these men possess no ordinary scientific acquirements; and it is not too much to say, that next to the indefatigable investigations of such men as Col. Reid, Messrs. Redfield, Thom, Piddington, and others, the subject of the "Law of Storms" is greatly indebted to the intelligence of commanders in the Mercantile Marine, who having detected the hurricane as it flung off indications of its presence from the edges of its rotating disc, watched its gradual development, and not only so manœuvred as to save their ships, but have in addition given us all the benefit of their experience. Men of this character have much to occupy their attention on board their respective vessels, and it appears almost too much to expect that they can conduct with that nicety which delicate instruments require, a series of observations having reference to some of the most recondite portions of meteorology. At the same time many will gladly contribute information that may be *roughly* obtained, even of an instrumental character; and here we may refer to the adage with which we commenced this paragraph. If we cannot get an elaborate series of barometric observations carefully reduced to the freezing temperature, corrected for capillarity, capacity, and so forth, and brought to the reading of the Royal Society's standard, let us be content with what we can obtain. If there be one class of people who *cannot* use such observations, there is another class who *can*. We have now lying before us a very valuable series of barometric observations made every two hours during a voyage out to Australia and home by the way of Cape Horn. We repeat it, the observations are very valuable, yet the capabilities of the instruments are not given. We are ignorant of the zero error. We know not the correction for capacity, and so forth. Any one at all acquainted with barometric readings, must be aware that all the quantities above-named have their limits. It would be well to know them, but the actual oscillations of the atmosphere, when they exceed these limits, and this they almost always do, are clearly recognisable, there can be no mistake, so far as the great questions bearing on the immediate interests of the navigator are concerned. Shall we then throw these observations overboard, because certain corrections have not been determined or applied?

So far as observations by means of instruments are concerned, there exists at present instructions of so valuable a character, under the sanction of the highest authority, that we feel that any attempt on our part to present to the Merchant Service a series of instructions for observing the barometer, thermometer, &c., would, at the very best, amount but to a repetition of them. They are to be found in the "Admiralty Manual of Scientific Enquiry." "The Hurricane Guide" also contains a series of instructions for placing and observing the barometer very similar to that inserted in the Admiralty Manual, having in the first instance been written professedly for that work. These instructions enter fully into all the minutia requisite for securing a series of observations capable of being employed in any investigation of the most delicate character, in fact, so far as we are aware, they leave scarcely anything to be desired.

We have alluded to observations of a somewhat different character; and while it is very desirable that all the observations should if possible partake of that nicety and accuracy contemplated in the instructions referred to, yet those of the kind already mentioned, are not the less acceptable because the conditions alluded to in the instructions have not been complied with. Taking them then as a basis, we shall point out the most important barometric observations to be made during a voyage round the world.

BAROMETER.—Upon leaving the chops of the channel, the seaman may expect to meet with very considerable oscillations of the barometer, especially if he sail from England in the winter. The first point of interest is to note in his log the latitude and longitude in which these oscillations *cease;* they are intimately connected with the wind, and when he finds the barometer mounting above thirty inches, and attaining a steady elevation, the direction and force of the wind should be noted in immediate connection with the barometer. It is not at all unlikely that as he is leaving England, he may fall in with some quadrant of a revolving gale. This, the barometer, will invariably give him notice of, perhaps not in the way he may expect; nevertheless, the barometer will be affected by the storm, it may be by being considerably depressed, or on the other hand more than ordinarily elevated; both result from the presence of a cyclone. There is however this difference, when the barometer is greatly depressed, the ship is near the centre; when greatly elevated, she is near the margin. If the captain manœuvre with the cyclone, let him by all means keep the barometer well up, and carefully record in his log all the changes of the barometer, wind, weather, sky, and sea. He cannot be too minute, so far as circumstances will allow, in his record of the phenomena of a cyclone, let him be in whatever part of the world he may.

As the mariner sails south, he cannot be too observant of the wind, his eye on the barometer, noting it, if possible, every two hours. An object of no ordinary interest is to ascertain the *highest* point the barometer attains in going south from 45° north to the belt of equatorial calms. This has an important bearing on navigation; as the barometer attains its greatest elevation, the seaman is perplexed with calms; and as these shift according to the season of the year, he should be on the look out for his catching them on leaving the variable winds of the Northern Atlantic, or more properly speaking, the S.W. Passage winds. Let him note in his log the day and hour when he left these winds and fell in with "calms, light airs, and variables;" the altitude of the barometer as he passed through the calms, and the first indications he obtains of the N.E. Trade. As he passes through the Trade, his barometer will fall. He should note the strength of the Trade, as it is very important to connect this with the height of the mercury. Arrived at the southern boundary of the N.E. Trade, he should insert in his log the day and hour he lost it, with the latitude and longitude; and as he passes through the Doldrums, the barometer should be read at the intervals named, its connection with the calms being quite as important as with the Trades on either side. Should he be near the West Indian islands during the hurricane months, especially in August, let him watch the barometer most assiduously,

and having made himself acquainted with the *mean* height of the mercury on the northern border of the Doldrums, let him be on the alert, for the slightest deviation either above or below the mean; and in connection with this deviation, let him note in his log the appearance of the sky, the swell, and in what direction, if there be one, and other indications of a coming hurricane. Whatever may have been said, written, or printed relative to "the barometer having hitherto been used principally as a monitor to the mariner to warn him of the fluctuations of the changes in prospect," there can be no question that the barometer is an invaluable instrument to the seaman. If some have supposed it has given no warning of a coming storm, it is not the less valuable, for, if well understood, it will always stand in the position of a faithful guide, indicating the course the mariner should adopt. It is as a friendly finger post,—go there, it says, to the seaman, as it rapidly falls, and you will stand a chance of foundering; but pursue this course, as he turns his ship's head about, and the glass rises, and you will escape danger. The slightest deviation from the barometric mean between the tropics demands on the part of the commander immediate attention. And how is this barometric mean to be obtained? Simply by all vessels that will co-operate, reading their barometers every two hours, on the voyage out and home.

Having crossed the Doldrums, and contributed his quota to their barometric phenomena in the way recommended, the navigator finds himself in the S.E. Trades. Note the latitude and longitude when they were first met, and proceed in all respects as when sailing through the N.E. Trades, recording the strength of the wind, &c. When passed, record the latitude and longitude on leaving them, and proceed to determine the highest point of the barometer while sailing south, noting its latitude and longitude, and the period the ship was fighting the southern calms.

Upon losing the calms again, note time, latitude, longitude, &c., and carefully observe the barometer as the ship gets towards the higher southern latitudes. If her course be towards India or China, again the S.E. Trades and also the Monsoons will come in for their share of barometric determinations; wherever vessels may be barometric observations will be most valuable, and we may again reiterate our advice. Let no commander be deterred from making the observations because he has not a "*compared*" barometer on board; if he have one, so much the better, but if he have not, any observations he can furnish us with, are better than none. Besides, if he discuss his own observations or any portion of them, he will soon determine the value of his instrument, and if it don't please him, he will get a better.

Upon running on a parallel in high southern latitudes, close attention to the barometer will be very important, the commander may fall in with revolving gales, and it often happens that the barometer is one of the best indicators of the nature of the gale, if it be one that does no harm, scarcely strong enough to compel the commander to take in a reef; still it is important to fix its whereabouts, to track its path, to determine, if possible, its size. The series of observations already referred to has enabled us to determine the existence of two or three pretty sharp visitors of this character in localities which have

hitherto been blanks on our storm maps. We don't want reduced observations for this object; just let us know how, when, and where, the barometer falls and rises with the winds that accompany these movements, and we can soon see whether a cyclone be walking abroad. But to get at this the two hourly readings are essential; keep up these, and we can find out afterwards the kind of gale you have encountered.

The return voyage is much the same as regards the barometer as the outward one, and there is this advantage, you get a double determination of all the points mentioned, and you obtain greater facilities for determining the mean pressure of the ocean.

THERMOMETER.—If the barometer can render good service, (although the observations may be unreduced), in determining the relation of the pressure of the atmosphere to the wind, &c., the thermometer is a no less valuable instrument. As well as the barometer it has come under the attention of the Conference at Brussels, and we find that all thermometers, employed in connexion with any systematic arrangement for concerted observations, are to have the centigrade scale attached, with a view to its final and general adoption.' It is well known that Fahrenheit's scale is the one adopted in this country, and all observations made in the Merchant Service are recorded in the terms of this scale. As we remarked under the head of the barometer, it is too much to expect observations of extreme nicety from men who have so many other matters claiming their attention, so we would observe that the thermometers may have the centigrade scale attached, but we cannot expect the Merchant Seaman will take the trouble to learn a new scientific language, for what? To record the temperature in a scale that shall save trouble to a staff of reducers. If we desire co-operation on the part of the Merchant Service, it will be best to leave the matter generally in the hands of the intelligent Commanders in that service. There would probably be less difficulty in reducing Fahrenheit's readings to the centigrade in an office than in each captain employing a scale with which he is unacquainted.

Again, with regard to the index errors of thermometers, nothing can be too refined for fixed observatories, ships on scientific services, &c. in which the attention of the observers and officers are, or ought to be, concentrated on scientific objects. But it is otherwise with the Merchant Service. All that can be expected at present are trustworthy series of thermometrical observations made with *ordinary* instruments. We say ordinary instruments, because these are doubtless sufficiently accurate to rough out the great oceanic relations of temperature, such as we may obtain from the service, and when important localities come to be known by means of these approximate observations, then the ship of war, properly equipped with barometers, thermometers, wet and dry, white and colored bulbs, anemometers, &c. may be sent to these localities for the purpose of determining the absolute values of the meteorological elements indicated. Solicit co-operation of the Merchant Service, with all these elaborate and recondite methods, and but few, if any Captains, will give the required aid. Be content with such observations as the Service can easily render and it will rapidly improve into an *accurate* system.

Observations with the thermometer have a three-fold relation to the ocean, they assist in determining the temperature of the air immediately above the surface of the water. They ascertain the temperature of that surface and also of the water below. They are all important, the first series may be combined with similar observations on land, and help to determine the course of the isothermal lines, or lines of equal temperature. The second series gives the temperature of the surface bounding the ocean and atmosphere, and for the locality, between 56° north and south latitudes is always hottest; *i.e.* a thermometer whose bulb is just on the surface of the water, so as to be wetted by it, read *hisgher* than one above or below. The third series is calculated to elucidate the law of the decrease of temperature as we descend in the ocean.

In order to carry out observations of the first series, having reference to the temperature of the air *above* the ocean, it will be necessary so to place the thermometer, (which of course will be the best the commander can obtain, and if a compared one so much the better, although it is desirable the observations should not be lost on this account), that it may not be influenced by disturbing causes, such as heating by the direct rays of the sun, or by reflection of heat from various parts of the ship; another disturbing cause which may interfere with the value of the observations is the wetting of the bulbs by rain or spray. To obviate these difficulties requires but little trouble when the position for the instrument is fixed on; it should be so suspended that its bulb may be entirely detached from any part of the ship; it should be at least six inches from any wood, and inclosed in a sort of *double* box, formed with sides somewhat of the character of Venetian blinds, a few of the laths immediately in front of the scale may be made adjustible, so that they may readily be brought to a horizontal position for the purpose of reading the instrument; by means of such an inclosure as this it is apprehended the thermometer will not only be protected from harm, but also from extraneous influences, and but little trouble in mounting the instrument for observation is given to the commander. As there is a great chance of instruments being broken on ship board, he should be provided with several.

It will probably be sufficient to state, with regard to the observations to be made with the instrument so placed, that if read at the same time with the barometer (every two hours) the series will be more valuable on several accounts, and the laws of the distribution of heat *over* the surface of the sea may be more clearly made out.

If the series of observations just mentioned are considered important, that occupying the second place in the previous enumeration is much more so—it immediately concerns the mariner—it is intimately connected with the currents of the ocean—it has a greater interest for him than any other class of observations we shall have occasion to name in the course of these remarks, with the exception of those of the winds; and a regular series made by *every* captain of a merchant vessel, and discussed by *himself*, would lead to great improvements in navigation. Three observations of the temperature of the surface water each day, would, during a long voyage, be invaluable, and

this is easily accomplished at three stated hours dividing the twenty-four into as nearly as possible three equal intervals; take up from the *surface* (it is requisite to be careful you don't get it from below the surface) a fresh bucket of water, and *immediately* plunge a thermometer into it, hold it steadily for some two or three minutes, and read the temperature while the bulb is in the water, and record directly afterwards in the proper column. One of the periods at which this observation should be made is noon.

As great stress has been laid on these observations it may be well to point out their value. Every seaman knows that the ocean, as well as the land, has its rivers: these are the great oceanic currents, a knowledge of which is so exceedingly important to navigation; these currents differ in temperature and greatly modify thermometric relations of the air above. The Gulf Stream is a well-known current, it flows between two walls of cold water, its temperature being generally from 7 to 10 degrees higher than the water on each side. There are cold currents as well as warm, and the bucket-full of water drawn up three times a day to ascertain its temperature will announce to the mariner when he is in the neighbourhood of a current, and not only so, but will enable him to ascertain its limits in the locality in which he may cross it.

We have hinted that it would be desirable for the seaman to discuss these observations himself. How is he to do this? Perhaps one of the best modes would be to track his course out and home on a chart, recording on each day's position in its proper place the temperature of the water drawn up in the bucket. By and by he has passed the highest surface temperature, which may probably be 80°, and he finds as he proceeds the water to become cooler. He may thus have gradations of temperature from 40° to 80°, and as he gives the temperature observed, with the *day* and *hour* on the chart, the regions of every 10 degrees may be indicated for the season of the year he is sailing in by a slight dash of some different color across his track. These suggestions are not made to save any person trouble in reducing or discussing the observations after they have left the hand of the commander. They are to exhibit the great importance of individual effort. By the very slight amount of labour requisite to carry this out the mariner at the end of a voyage has presented before him a bird's-eye view of the oceanic temperatures he has passed through, and these combined with his drift, difference between his position by observation and dead reckoning, and what not, as recorded here and there in his log, will advertise him of the existence of currents which his thermal chart will prepare him for more closely observing the next time he goes that way.

Thus much for individual exertion. If a few captains, well known to each other, or who have some common friend to whom they can transmit such charts as these, a foundation is laid not only for comparison, but for extending these colored dashes indicating differences of temperature. Outlines of currents begin to be displayed, and our knowledge of oceanic temperature increased. It is but an extension of this idea that is contemplated by a large system of co-operation.

The idea of such co-operation is very valuable; but while it is organizing, let us be up and doing.

The third series of observations, having reference to the determination of the temperature at various depths in the ocean, do not possess so much interest for the mariner, (unless he desires to make himself fully acquainted with all the phenomena of the element in which he is incessantly occupied) as that to which we have just solicited his attention. It may, however, be as well to glance at the general relation of temperature to depth, so far as it has yet been made out, leaving commanders to act as they may find it most convenient in this as well as in all other respects. From pole to pole a line, or, more properly speaking, a region of invariable temperature exists. This temperature is 39°·5 Fahrenheit, or about the temperature at which water attains its greatest density. On the parallels of 56° north and south the temperature of the surface water is said to be 39°·5. From 56° north and south the sheet of water of greatest density underlies two beds of cold water, its depth at 70° being 4,500 feet within the parallels of 56° including the equator, the same sheet of dense water underlies a vast bed of warm water, its depth under the equator being 7,200 feet. Within this immense bed of water, varying in temperature from 40° to 90° are found the various currents most important for the navigator to become acquainted with, and which such observations as are alluded to under the last head cannot fail of elucidating, and when opportunities serve, observations of the temperature of decp water will go far to indicate the depth to which many of these currents penetrate.

Thus far our remarks have reference to observations through the medium of instruments. We have freely expressed our opinions on the employment of instruments at sea. Every instrumental determination is of immense value; it gives us a numerical expression of a phenomenon by which we can most readily compare one phenomenon or one class of phenomena with others. In all observations of the kind we again say, let the instruments be of the most perfect character attainable, both as regards workmanship and capabilities. But at the same time let no one slacken in the good work of accumulating information to build up the fair temple of science, because he cannot command the very best instruments, nor devote the requisite time to their efficient manipulation or the application of the reductions they demand. We have a word to say on first-rate instruments; and first, with regard to the Barometer: in the instructions to which we have alluded in speaking of the index 'Error,' or 'Zero,' as it is technically termed, we find the following statement—"To do so, however, with perfect effect, will require that the utmost care should be taken of the portable barometer; it should be guarded as much as possible from all accident, *and should be kept safely in the 'portable' state, when not immediately used for comparison.* From this it is clear that a first-rate barometer, whose index 'Error' is *well* determined, is a rare instrument, and when obtained is far too valuable and important to risk in ordinary marine observations, while there can be little doubt that facilities may easily be obtained on shore for comparing ordinary baro-

meters, both previous to sailing and after returning home." The same instructions also recognize the great value and importance of a thermometer, whose 'Zero' is known: "it should be kept," says the instructions "*solely* as a thermometer of reference, and every thermometer he (the observer) employs should be compared with it." In this sentence it is evident that ordinary thermometers may be advantageously employed for marine observations, and where great delicacy is required comparisons may be made with standards when on shore.

Before finally dismissing the subject of instrumental observations, we beg to call the attention of Commanders in the Merchant Service to the announcement lately made by the British Association for the Advancement of Science, "That standard thermometers, made at Kew, be supplied to members of the British Association, and Fellows of the Royal Society at £1 each." From the report of the Council, presented at Belfast, we find that fourteen of these thermometers have been supplied to the Admiralty for employment in the Arctic Expeditions, and that twenty sets of instruments for proposed meteorological observations in India have been examined and verified at Kew. How far it is intended to render all official observations *conformable* to the instruments now at Kew, so as to cast doubt upon every other series, we have no means of judging, but certain it is, that unless conditions, in themselves perhaps not of such vast moment, are uncomplied with, the observations are considered valueless. We have met with much difficulty from this circumstance alone. An admirable series of inland observations now progressing exhibit many blanks which might be filled up from registers at present made, these there is some reason to believe are rejected on account of certain conditions not being complied with. Again, the very nature of the instruments themselves, delicately constructed and not suitable for constant employment on ship-board, must render it extremely difficult for men in the Merchant Service to take any great share in the proposed system of co-operation. Instruments made at Kew are evidently of the character recommended by the instructions before mentioned to be kept *solely* for purposes of reference; and when not so used, they are to be safely boxed up. After all, ordinary instruments must be used on ship-board, and methods adopted that are suitable to and consistent with the multifarious engagements of the Merchant Service.

It may be as well to recapitulate the instrumental observations the seaman in the Merchant Service can make with very little extra trouble.

1st.—Read the ordinary ship's barometer every two hours.

2nd.—Read the external thermometer, mounted somewhat in the way described, also every two hours.

3rd.—Take the temperature of the *surface* water three times each day.

Note.—It would be well to reserve *one* thermometer for this object, so that all the observations may be comparable among themselves.

4th.—Take occasionally the temperature of water drawn up from various depths *below* the surface.

The first three observations may easily be accomplished by being confided to the officers of the respective watches.

WIND.—We have said the seaman *observes* and *records* professionally, but not in the departments already mentioned; these are clearly additional to his ordinary observations and records, which consist of the wind, weather, drift, and whatever else appertains to a well-kept log at sea. Of these the wind is by far the most important, and claims from the mariner the greatest attention. It is in this department that "the remarks of an observant man recorded at the time with due advertence to day and hour are invaluable." It would be important to note the direction of the wind every time the barometer is read, but if it be not convenient to do this, the time of every *change* of wind should be accurately noted, and its position—latitude and longitude—as near as may be recorded. Careful series of such observations have already led to the shortening of voyages, and the elucidation of many questions of a highly interesting meteorological character bearing on the interests of navigation. In a voyage outward be careful to notice the changes, and most particularly, the directions of the wind on crossing the belt of northern calms; determine, if possible, its breadth, and the latitude and longitude in which you get the N.E. Trades; do the same on crossing the Equatorial calms, and record both the losing of the N.E. and getting the S.E. Trades, if the vessel be going southerly. Give the same attention to the belt of southern calms, noting the latitude and longitude on losing the S.E. Trade, and determine, if possible, the breadth of these calms. To render this register of the wind increasingly valuble, especially when compared with the records of other vessels, accompany each direction of the wind with a notice of its force; this may be done in accordance with Admiral Beaufort's scale, which is almost sufficiently before the public to require only a reference to it, nevertheless we give it below.

0	Calm...............	
1	Light air	Steerage way.
2	Light breeze	All sail set, 1 to 2 knots.
3	Gentle breeze......	„ 3 to 4 „
4	Moderate breeze...	„ 5 to 6 „
5	Fresh breeze	Ship just carries royals
6	Strong breeze......	„ under single reefed top sails and top gallant sails.
7	Moderate gale ...	„ double reefed top sails, jib, &c.
8	Fresh gale	„ three reefs.
9	Strong gale	„ close reefed top sails and courses.
10	Whole gale.........	„ close reefed main top sail and reefed fore sail.
11	Storm..............	„ storm stay sails.
12	Hurricane	„ cannot carry canvass.

WEATHER.—Observations of the weather as enabling us to extend our knowledge of the prognostications of storms, the meteorological characteristics of certain districts of the ocean in which monsoons play, or calms baffle the navigator, and particularly in the regions of

the Trades, are exceedingly desirable and very valuable. We can scarcely expect from the Merchant Service delicate hygrometric observations by which the distribution of humidity may be made known to us, but we can hope from such a record of the weather that dry and humid districts of the atmosphere over the ocean may stand in marked contrast on our physical maps, a record of rain, its absence or presence, light or heavy, accompanied or not by thunder and lightning, may easily find entrance in a seaman's log. If the duration of the rain, its time of commencement and termination be recorded, so much the better. Note the clouds, are they drawn out as threads across the sky, or is there a dense thick veil overhanging the ocean, through which the stars "look big with burrs about them," and the sun or moon is surrounded by a large halo? Again, are they piled up as rocks and mountains, towering to an amazing height, their bases presenting a dark inky aspect, from which heavy rain and oftentimes squalls of hail and snow are precipitated? Fail not to record such appearances; note also their color; do they present a sober greyish aspect, or is the sky illuminated, as it were, with a series of gorgeous spectacles, the zenith presenting a clear deep blue azure, and the sky, downwards to the horizon, melting into a variety of tints on which the clouds are projected in bold relief, and with striking contrast of color? Mark them well at eventide, do they present the appearance of a heavy bank in the horizon of a dull leaden hue, and if the ship in her course approach them, do they, as it were, draw around her, as if they would inclose her? Is the sun at his setting shining through a haze which gives his rays an angry tinge of red, so that he goes down betokening a conflict of the elements? Note it particularly. It is morning! Every thing appears of a deep crimson hue, a red light illumines every object. Mark it well, it indicates a coming hurricane. All these appearances, and many others in the sky, which we cannot now name, should find place in a log, so that in constructing physical maps we may be able to indicate the localities in which such and such weather may be met with. Note also the appearances of fish or birds that may be seen in the course of the voyage, and especially the influence of the weather on them.

THE OCEAN.—The Ocean, its appearance, colors, agitations, swells, &c. claim much of the seaman's attention. From the smoothness of the water during a calm to the high pyramidal sea into which it is lashed by the furious and ungovernable winds of the hurricane occurs a variety of gradations, a record of which should find place in a log; most of these are generally noted, and will be enhanced in value by being combined with the observations already recommended. Any peculiar appearance should on no account whatever be overlooked or omitted, the phosphorescence of the sea should be noted, and a bucket-full of water drawn up, that some may be preserved in bottles for examination at home; especially as a difference of opinion now exists as to the cause of this phosphorescence. Notice particularly the *color* of the sea; this is very important in connexion with the series of observations on surface temperature already strongly recommended. Every reading of the thermometer in the bucket should be

accompanied with a note of the color of the general expanse of the sea, as it appears to the eye when viewing it from the deck. At the same time record the state of the water, as to the extent of its agitation, &c.

In connection with the colour of the ocean, its transparency is an interesting feature, and should be observed as often as circumstances may permit. If a sounding-lead, painted *white*, be lowered into the water, the eye of an attendant being fixed on it as it descends, the instant he loses sight of it, let the person having care of the line stop it, and note the number of fathoms run off; this number may be regarded as a measure of the transparency, and entered in the log accordingly.

The swell of the sea is a very important phenomenon: there is great reason to believe that it is mostly, if not always, connected with storms, and to render it available in the further investigation of these mighty agitators of the deep, it has been suggested to devote a column in the log for recording all the features of the swells and cross seas experienced. Note the direction and state of the swell, also the appearance of the sky in the quarter from which it comes, observe, if possible, the height of the waves, and the first indications of a cross sea; be particular as to the existence of cloud-banks, even when a moderate sea is rolling, and should lightning be seen, notice its locality as to the points of the compass, and also if it be of the ordinary kind; record particularly its colour, and if it appear in the form of columns shooting upwards from the horizon, as so many stalks glaring dull and luridly upon the ocean, make an especial note of it. If it appear as sparks from a flint and steel, or as flashes from a gun, record this also; in fact, allow no lightning to pass without recording its characteristic appearance.

Storms.—A volume might be written on their phenomena; volumes have been written; anything and everything connected with them demand the seaman's most assiduous attention. Nothing should pass unnoticed, nothing should remain unrecorded. While sailing through storm localities be on the especial look out for them; their winds are exceptions to the general winds of the localities they visit, notice, therefore every change of wind: does it freshen, record, as before suggested, its force according to the sail the ship is carrying; if the proximity of a storm be apprehended note it in the log with the reasons for such apprehension. Is your wind veering? Note if it be with or against the sun, and record the position you apprehend your ship to occupy in the storm. Your two-hourly barometric observations, combined with the direction and force of the wind, will tell you if you are approaching or receding from the centre, alter your course if need be, to bring up your barometer and avoid the centre; but a very slight alteration may be necessary, perhaps not more than two or three points, and you gain in the long run by getting a fair wind. Are you likely to get a fair wind from the hurricane? Keep it by sailing on the curved course, so that you may benefit by running with the cyclone as far as the course of the ship and storm may be parallel. Note all these and many other circumstances, and make as much use as you can of every hurricane you fall in with.

We have now brought to a close our remarks on a system of maritime observations. Whether a commander may make such observations as here alluded to, for his own satisfaction, and to augment his own knowledge, or whether he take part in any concerted arrangement, we apprehend they are such as the Merchant Service can most easily and readily make. We have taken up the two most important instruments, and endeavoured to indicate their great importance in furnishing numerical values of the elements we wish to observe. We have called attention to the wind, the weather, the ocean, and storms, and we do so because each of these departments bears very essentially indeed on the profession of the seaman; and the most valuable facts are gathered with scarcely any trouble. Let a settled habit be once formed of accurately noticing and faithfully recording every ordinary as well as every remarkable appearance presented by the sky and ocean; let every change of the wind, with its accompanying force, find entry in the journal, and with these entries, let all the phenomena of storms as they arise be minutely described, and a vast body of valuable information will be accumulated, the result of which must be that our knowledge will be increased—our knowledge of the winds and currents of the ocean, of the ocean itself, and the storms that sweep over its surface. This knowledge we can use: it is power—power to shorten our voyages, power to save our time, power to avoid baffling and contrary winds, and not only so, it is power to convert a deadly enemy into a friend, to use the very hurricane that walks abroad scattering desolation, as the means of wafting us onward to our port; and these results in a great measure depend on *numbers*, if it be thought better co-operation; but let the system of co-operation be a good one, numbers co-operating in obtaining the information, a few being engaged—who have no other object than the advancement of knowledge, the perfecting of navigation—in arranging, comparing and discussing this information. Thus by an *unfettered* system the seaman will contribute all in his power, and those who undertake to work out the results will make the best of the materials in hand, so that the science of the ocean may grow up into perfection.

S.

OUR MERCANTILE MARINE.—No. I.

ITS PROGRESS AND NUMERICAL STRENGTH. THE IMPORTANCE OF IMPROVING THE BUILD AND SAILING QUALITIES OF SHIPS.

Our first advance towards a regular system of commerce dates from the reign of Henry VII. (1485), and the steady growth of our Mercantile Navy from that of Elizabeth (1558). During the earlier periods of our history, the internal state of the country, and long foreign and domestic wars, importantly as they influenced the national character, had been far from favorable to the development of those resources on which our present greatness depends. But although among the last of European nations vigorously to enter on that path of commercial

enterprise, which a commanding insular position would seem to indicate — a people at once active, persevering, and familiar (from the nature of the coast, sea and climate) with every danger that trains the skilful mariner, when fairly embarked in a career which promised to lay the foundation of permanent prosperity, would instinctively concentrate all their energies to rival the most powerful competitors in the race.

An epoch of great activity had dawned on the foremost nations of Europe. The use of the mariner's compass and the application of astronomy to navigation had given to seamen a confidence previously unknown. The Portuguese admiral Bartholemew Diaz by doubling the Cape of Good Hope in 1487, prepared the way for the voyage of Vasco de Gama, who advanced by that route as far as India, and within half a century Portugal was trading to China and Japan. Spain was no less fortunate, when, with the scanty means grudgingly furnished to Columbus, that truly great navigator proceeded to unlock "the gates of the ocean" in 1492, and through his discoveries the richest kingdoms of the New World fell under the Spanish yoke. The bounds of knowledge were still further enlarged when Magellan in 1519 undertook the first voyage round the world, and passed through the Straits to which he gave his name. In these new fields of enterprise and discovery the English nation now resolved to divide the spoil, and it was under higher and nobler influences than had heretofore guided them, that, in the days of Elizabeth, "our seamen from the banks of the Thames and the Avon, the Plym and the Dart, self-taught and self-directed, with no impulse but what was beating in their own loyal hearts, went out across the unknown seas, fighting, discovering, colonizing, and graved out the channels, and at last paved them with their bones, through which the commerce and enterprise of England has flowed out over all the world."

The progress was commensurate with the energy displayed, and the demand for shipping increased to such an extent, that the foreign builders who had hitherto supplied the nation, being unable to furnish the vessels required, ship-building was commenced in our own ports. Richard Chancellor, in 1555, discovered the route to Archangel, when a treaty of commerce was entered into with Russia. A few years later Drake circumnavigated the globe; the two Gilberts, Raleigh, and others directed their course to the American shores, where the name of England soon became as famous as that of Spain had been rendered infamous; and Davis penetrated the Polar Seas. Not the least remarkable circumstance in all the voyages undertaken at this time is the small size of the vessels—the greater number varying from 40 to 100 tons burden.

The commerce of England was increasing year by year; in 1569, the Czar Ivan Basilovitz granted the monopoly of the Russian trade to an English company, and the East India Company received a charter in 1600. English ships were traversing every sea, and English merchants trading to every region where a market could be established. The nation had found wherein its strength consisted, and by never relaxing into indolence its resources were so far augmented that the

power which in the days of Elizabeth had been jeopardized by the Spanish Armada, was enabled, in the time of the Protectorate, to sweep the seas, and to compel the Dutch (who had dispossessed the Portuguese of their eastern colonies and were considered the most powerful maritime nation of Europe) to lower their flag to British vessels. Cromwell abolished a large number of the monopolies granted in previous reigns, but in 1651 he passed the Navigation Act, which tended to increase the commerce and maritime preponderance of Great Britain by securing to her merchant vessels a monopoly of the carrying trade. Whatever reverses have occurred since that period, their influence has never been such as to retard for any length of time, or to materially affect, the general prosperity; in fact the wealth of the country has been steadily progressive. The mercantile marine has been gradually augmented, and although no sufficient data exist to mark its numerical strength, year by year, previous to the commencement of the present century, it is supposed to have doubled in the 28 years from the Restoration to the Revolution, and the same thing occurred again between 1700 and 1760; at the latter date the gross burden being upwards of 600,000 tons.

In the year 1800 the number of vessels in the commercial fleet of the British Empire was about 18,000, the burden being 1,900,000 tons, and employing 138,800 men; since that period the increase has been proportionate to the extent of our colonies and the growth of our manufactures, and larger than that which has taken place in the population. Recent official returns furnish the following data respecting the number of ships built in the British ports in the several years given below:—

Year.	No. Built.	Tonnage.
1815	864	97,949
1825	1,179	143,741
1830	1,150	116,872
1835	1,231	158,527
1840	1,981	295,428
1845	1,256	166,733
1850	1,462	245,130
1851	1,439	262,483
1852	1,382	293,679

The same documents state the number of vessels belonging to British ports during the same years to be as under:—

Year.	Vessels.	Tonnage.	Men.
1815	24,860	2,681,276	177,309
1820	25,374	2,648,593	174,514
1825	24,280	2,553,682	166,183
1830	23,721	2,531,819	154,812
1835	25,511	2,783,761	171,020
1840	28,962	3,311,538	201,340
1845	31,817	3,714,061	224,900
1850	34,288	4,232,962	239,283
1851	34,244	4,332,085	240,928
1852	34,402	4,424,392	243,512

Taking these figures to be strictly correct, which is doubtful as regards the latter years, they convey but a limited idea of the actual progress. During the last forty years the laws affecting the shipping interests have been repeatedly modified, the changes being principally directed to the relaxation of the monopoly which for 160 years had been extended to British ships and British seamen, and which had certainly been effective in crippling the maritime greatness of the Continental powers against which the Navigation Laws had been chiefly directed. The first deviation from the principles so long adopted was commenced by Mr. Vansittart in 1815, in favor of the United States; a more extensive alteration known as the Reciprocity System was introduced by Mr. Huskisson in 1823, and the entire repeal of the Laws was completed in 1849. It is not our purpose to discuss the merits or demerits of a system under which it cannot but be acknowledged the British shipping interest has prospered to a very great degree. It had always been urged that to tamper with the Navigation Laws would be the inevitable ruin of our trade and commerce; the depression which followed immediately on the introduction of the Reciprocity System might tend to strengthen this impression, but by taking the average of the tonnage employed and ships built during a number of years the tendency is found to be progressive rather than retrograde—as in the 20 years from 1822 to 1842 the tonnage of the registered shipping increased 40 per cent., and in the amount of British shipping cleared outwards the augmentation was 122 per cent. The depression to which allusion has just been made can now be traced to other causes than those resulting from legislative alterations, in the same manner as the present activity is not due so much to the repeal of the Navigation Laws, as to the stimulus given to business by the discovery of the "gold regions," and the demands which subsequently arose.

Trade and commerce must always be subject to fluctuations and occasional difficulties—in fact, they are inseparable from mercantile greatness; and the history of our own country, no less than that of every other, ancient or modern, which has been largely engaged in mercantile pursuits, offers abundant examples, in which the most unlooked-for events have been productive of results the least anticipated, whether for good or for evil. It behoves us so to use present advantages, that when the tide of prosperity turns, the temporary check may produce the smallest inconvenience, and find us prepared to direct our efforts into new channels of enterprise.

As the greatest commerical nation in the world, possessing the largest mercantile navy, it would naturally be presumed that ship-building as a science had reached, we will not say, its utmost limits, (for science is always progressive), but at least a very advanced and prominent position among us, and that all other nations should look to Great Britain for the best treatises on naval architecture, as well as the finest models of ships of every class. We are bound, however, to acknowledge (and no small amount of discredit attaches to us in consequence) that this subject, which is of paramount interest to us as a maritime power has not received the attention it merits—that the

ablest and most complete treatises have come from our Continental neighbonrs—and further, in these days, when the sailing qualities of ships are of vast importance in particular trades we have scarcely escaped the disgrace of yielding the palm of victory to our Transatlantic competitors, who have, in more than one case, obtained higher freights than our own vessels in the same market.

Size, strength, and durability combined, had for a long period been the characteristics of British-built ships, but in the age of steam-power and electric telegraphs it becomes necessary to produce something better than the old round-bowed and wall-sided vessels, which satisfied the last generation—speed is now a test no less than the qualities just named. Fully aware of our faults, there has of late been no lack of energy. That we have not yet attained to that advanced state in ship-building which could be desired may be attributed in a great measure to the fact, that, in determining the form, there has been less reliance on scientific principles than on empirical rules;—nor can legislation be held altogether blameless in the matter, if it be true that the English tonnage law, enacted for the purpose of regulating the mode of measurement, practically provides "for the effectual and compulsory construction of bad ships; and that "to cheat the law, that is, to build a tolerable ship in spite of it, is the highest achievement left to an English builder." It must not be forgotten, however, that the form of the hull might be the best ever adopted, but, owing to a fault in the masting, or in the quantity of sails, or their distribution, the sailing qualities of the vessel might not exceed the average. The British Association for the Advancement of Science has, in its Mechanical Section, for a number of years past been employed in investigating the subject, and has been the means of diffusing information of considerable value, tending to improved methods of ship-building. One great result of our increased knowledge, added to our peaceful rivalry with America in the different markets of the world, has been the successful establishment of the *clippers*, constructed more or less approximately on the *wave principle*.

During the last three years, in the China Trade, the Chrysolite, Stornoway, Cairngorm, and Challenger stand pre-eminent. These, vessels have made the voyage from England to China, or *vice versa*, in periods varying from 94 to 112 days, a considerable gain as compared with former periods when we find that the average of 100 voyages made by ships belonging to the East India Company give 112 days from London to Bombay.

A fair statement of the position of vessels in the Australian trade is given in the following extract from the *Liverpool Albion* of last November:—"In 1851 few passages were made under 120 days; in 1852 the average passages of the London ships were 123 days. The shortest passages were made by the Ballarat, in 76 days; the Delgany, in 78; the Oriental, in 83; the Bangalore, in 84; and the Abel Gower, in 85 days. The longest passage was made by the Harmony, to Port Philip, and occupied 239 days. The average passages of the Liverpool ships were 110½ days. The shortest passages were made by the Marco Polo, in 75 days; the Anna, in 76; the Cambridge,

in 81; the John Grey and Progress, in 82; the Beejapore, Delta, and Northumberland, in 83; the Constance, in 84; the Argo and Serampore in 85,; and the Lady Head and Julia, in 86 days. The longest passages were made by the Una, 171 days; Eliza, 149; James T. Foord, 139; America, 136; Prins Hendrik, 181; Priscilla, 133; Anna and Eliza, 147; Mathilda, 159; Nahalannia, 140; Doffyn, 131; Don Pedro II., 149; and Cronkbane, 150.

"Of the vessels which sailed from London during the present year we have accounts of the arrival of 156 of them, the average passages of which amounted to 126 days. There are very few really good passages out of the 156 of which we have account; the shortest passages were made by the Gibson Craig, Kent, and Walter Hood, in 84 days each, and by the Jessore, in 92 days. Of the Liverpool vessels which sailed this year, we have received accounts of the arrival out of 78 out of the entire number despatched, and their average passages were 105½ days, being a clear gain of upwards of 20 days on each passage over those of the London ships.

"The shortest passages from Liverpool this year was made by the Marco Polo, in 77 days; the Indian Queen (sister ship to Marco Polo) and Eagle, in 82 days; the Falcon, in 84; the Lochiel and the Miles Barton, in 88; the Watergeus, in 90; the Sabrina, in 92; the Chenghis Khan, in 93; the Passaronang, the Sea, and the Rialto, in 94; and many more under 100 days, The longest passages were made by the Sandwich, in 156 days; the Swan, yacht, in 149; the Empire, in 148; the Psyche, in 143; and the Mary Nixon, 150 days; all of which, together with several others between 120 and 130 days, are computed in making up the average of 105½ days."

This statement is valuable, inasmuch as the widely-varying periods occupied by the different vessels, engaged in the Australian trade, show how much remains to be accomplished, and since more abundant materials than formerly existed are now before us, it is time to settle the question as to the principles on which a ship may be so constructed as to carry and sail; where the law interferes to defeat this end it should be forthwith amended, if not repealed,—leaving the builder to adopt in the construction that system which science as well as experience tells him is the most efficient. The record of quick passages will not then be so scanty as now, but we shall have a class of vessels making three, if not four, voyages in the same space of time as is at present requisite for two.

M.

SAILING DIRECTIONS FROM THE ARCHIPELAGO TO THE DANUBE, WITH REMARKS ON THE VOYAGE.

BY CAPT. E. G. DENT, MERCHANT SERVICE.

BOUND to the Archipelago, after making Cape Matapan, proceed between Cerigo and Cerigotto, keeping mid-channel till Cape Angelo bears north, then haul up to the northward; by so doing you ensure a steady wind and avoid the light baffling airs prevalent in the Bay of St. Nicolo on the S.E. of Cerigo. This course is better than going north of Cerigo, as it is a common occurrence, that, upon arriving between Cape Spathi and the Island of Cervi, vessels may have a long detention from light baffling airs; while others which have taken the southern channel have carried a steady breeze, and gained several days on the passage.

Upon getting Cape Angelo to bear north by compass, the track laid down on Laurie's chart may then be followed, either for the Doro or Tino passage; the latter is preferable in winter, or with southerly winds.

After clearing the Doro passage, and bound to Constantinople, a N.E. course will carry you up off Tenedos, between which and the Main is decidedly the best passage, either with a leading or contrary wind, as anchorage is obtainable the moment the breeze falls light.

The north-east wind generally rises with the sun, and gradually increases until mid-day, and then as gradually decreases towards sunset, followed by calm nights, with a heavy dew falling. Vessels bound up with the wind at N.E. must get under weigh at sunrise, beat up while the wind lasts, and anchor the moment it falls light, otherwise the current will drift them further back than the place from whence they started.

The best, and in fact the only way in which a vessel can beat into the Dardanelles in the summer season, when the N.E. winds prevail and the current sets down, is as follows:—Having beat up between Tenedos and the Main, continue beating up between the Rabbit Islands and the Main, until midway between Cape Troy (Koum Kala) and the entrance to the Dardanelles, then bring up close in shore in eight fathoms.

On the following morning get under weigh at sunrise, or the moment the breeze sets in, and stand over on the starboard tack (to windward of the Rabbit Islands) to the south-east side of the Island of Imbros, and work up in shore until off Cape Alik, from whence, on the larboard tack, fetch Cape Helles on the north side of the entrance of the Dardanelles. Should the day now be far advanced, or the breeze appear to be falling, it will be best to bring up there at once, in eight fathoms, close under the New Castle of Europe. But in following the above directions a vessel can generally arrive off Cape Helles about noon, in which case if the wind continues sufficiently strong, instead of bringing up, haul close up to the edge of the reef which extends from Cape Helles along shore, (the side of the reef is steep and the edge clearly defined by discolored water), and run along it

until you get Baron de Tott's Battery nearly abeam, you may then keep full, and edge over across the current towards the European side, which will enable you to fetch in a little to windward of the New Castle of Asia, you will then be in a slack current, and can easily beat up to the White Cliffs on the Asiatic side; upon arrival off which place it is better to bring up at once and wait for a fair wind, as it is impossible for a vessel to turn up higher than the spit running to the south west from Barber's point on the Asiatic side, distant about two miles from the White Cliffs.

The European side of the Dardanelles from Baron de Tott's Battery to the Old Castle of Europe is steep, with very few safe anchorages, and being much exposed is seldom frequented; moreover in the event of a S.W. wind, there is not room to cast. It however has the following advantage: should the wind come from the N.W. (which is very rare, and seldom lasts above a few hours), a vessel on the European side can run close in shore up to the Old Castle of Europe, and from thence round Point Nagara, while the vessels at anchor near the White Cliffs cannot cross the current.

When round point Nagara, a smart vessel can easily beat up to Lampsakis, by keeping in the slack current on the Asiatic side. On arrival off Gallipoli, the European side from thence to Constantinople is preferable.

Vessels at anchor off the White Cliffs can be furnished with supplies of all kinds at the town of Dardanelles, near the Old Castle of Asia, by sending their boats for the purpose; letters can also be posted. The various European Consuls have offices here, upon which their respective flags are always hoisted. Vessels are not allowed to pass the Old Castle, after dark, either going up or coming down. In passing them on the passage up, a boat with a Turkish officer on board comes nearly alongside, and makes inquiry as to name, destination, &c. On coming down vessels are obliged to heave to, sending their Firman, and two Spanish dollars, (in their own boat), to the steps where the Turkish flag is flying. On the receipt of which by the officer appointed, who does not detain the boat five minutes, the vessel is allowed to proceed.

When bound to Constantinople with the wind at north-east; the usual way after passing Point Stephano is to work up in shore close to the Town until you get near to the fishermen's houses and stakes, which lay out in the stream to the S.S.W. of Seraglio Point, and then stand over to the Asiatic side across the current (which will drift a vessel down as far as the Old Lighthouse below Scutari, before getting into slack water), from whence beat up in shore until you are close up with Leander's Tower, before standing over into the Harbour of Constantinople. Good anchorage is off the Gun Wharf at Tophana (22 fathoms,) but it must be remembered in bringing up that the current sets the opposite way to that in mid-channel.

On leaving Constantinople, bound down, it is advisable to obtain a Turkish bill of health, from the Turkish Harbour Master, in addition to the one obtained from the Consulate; the production of which will enable Masters to land in any part of the Turkish territories, without

being subjected to quarantine—which they would not be allowed to do without it. In addition to the Turkish Harbour Master at Constantinople there are several others appointed by the various Consulates, viz. English, French, Austrian, Russian, Norwegian, &c. &c.; they arrange all disputes as to mooring, collisions, capturing deserters, &c. Ships clearance papers are also obtained through them. It is usual to present them with two dollars on leaving. There are numerous ship-chandlers, who supply every thing required for the use of shipping: the most respectable are Teagea, Wright, Pisani, and Salomonie. Steam tugs are to be had at all times at moderate charges. Passenger steamers are also contantly running to all parts of the Bosphorus.

Upon arrival off Constantinople with a southerly wind, and bound into the Black Sea, it is decidedly best to run up at once into Bouyukdere Bay before anchoring; Masters can easily run down to Constantinople for their papers in the ship's boat; and then if the north-east wind comes down before the papers are obtained, a smart vessel can beat out from the Bay into the Black Sea, which is impossible if the vessels are anchored nearer to Constantinople.

A Firman has to be obtained from the Turkish authorities at Constantinople before a vessel is allowed to proceed into the Black Sea, which must be delivered up, or shown to an officer who comes off in a boat, when vessels are passing the batteries at the foot of the Giant's Mount.

It saves time if, upon arrival at the Dardanelles, the master of the vessel writes to his ship chandler at Constantinople (stating name of vessel, quantity of cargo, number of crew, and also where bound to), who will then order the Firman, and have it in readiness by the time the vessel arrives at the Bosphorus. The Firman has to be ordered two or three days before it can be obtained; so that if a vessel arrives at Constantinople with a southerly wind, and the Firman is not ready, it may cause a detention, as the Bosphorus cannot be passed through without a fair wind. The usual time to expect a southerly wind, and thereby to enable vessels to proceed through the Bosphorus into the Black Sea, is at the full and change of the moon; but it generally lasts only a few hours in summer. Steam tugs are now established in the Bosphorus and can be procured at all times at moderate charges.

Should a vessel be detained in the Bosphorus waiting for a fair wind, and any caulking is necessary, it can be done better and cheaper at Constantinople than in the Danube, or than at any of the ports in the Black Sea where there is quarantine, besides being a great saving of time. The usual charge for carpenters and caulkers at Constantinople is twenty piastres per day, and provisioned on board.

Masters proceeding to the Danube should, upon arrival at Constantinople, obtain a number of hard wood stakes, for fastenings on the banks of the river, and a heavy hard wood mallet to drive them with; also a dozen hand baskets used for passing grain in and out of the lighters, when lightening to pass over the bar.

Pilots for the Danube can be obtained at Constantinople, but those at Soulina are preferable, as they have a better knowledge of the

river; there are no regular branch pilots—those employed in this capacity being mostly Greek or Austrian seamen. The oldest and best pilot on the river is Nicholo Cerigrotto (a Greek and formerly master of a vessel); he resides close to the British Vice-Consul at Tolche. A letter addressed to him from Constantinople, directed to the care of the British Vice-Consul, would insure a qualified pilot who could be depended upon, and he would be ready for the vessel at Soulina when she arrived there. He speaks English, French, Greek, and Italian, and being a person of some property in Tolche, from which place he has been engaged piloting for the last twelve years, he is always to be found—a point of considerable importance, as some of the pilots connive at robbing the vessels whenever an opportunity offers and then decamp. The pilotage from Soulina to Galatz or Ibrail, and back to Soulina, in 1847, was ninety dollars, and in 1849, fifty dollars; but there is no regular fixed charge.

It is customary and very necessary to engage two or three extra hands at Soulina to assist in tracking the vessel up the river; and if going up loaded four will be necessary, for even with a fair wind very little progress will be made against the current when under canvass, unless there are several hands on the track line in addition. The persons so engaged remain on board until the return of the vessel to Soulina; they are provisioned, and work with the crew; besides saving time, they are of great service at the loading-ports in trimming and taking in cargo, and being used to the climate they are always available as a working party—most of our seamen being generally laid up in the Danube with fever and dysentery, particularly in the summer months. The usual charge for a tracker from Soulina to a loading-port and back is twenty dollars.

In proceeding from the Bosphorus to the Danube the best way is to make Serpent's Island, (on which is a revolving light,) and then steer for Soulina, bearing west, twenty-three miles. The land about the entrance of the Danube is very low, and not distinguishable in the night. If waiting for a pilot, or upon being bound up loaded, and wanting lighters previous to going over the bar, you may be compelled to anchor—in which case bring Soulina light-house to bear S.W., and the southernmost grove of trees on the north shore to bear N.W. you will then be in five fathoms water, and about three miles off shore. The same position is the best when waiting for the lighters after leaving the river.

Two buoys mark the channel over the bar, and distant half-a-mile from the light-house; they are moored, one on each side of the channel, to the north-east of the light-house, and about a cable's length apart. If compelled to run in without a pilot, steer for the light-house, when you get it to bear W.S.W., until you sight the buoys, and steer in the mid-channel between them—keeping mid-channel until nearly abreast of the light-house; you are then in deep water, and can bring up, or proceed according to circumstances.

When vessels are coming in, either with, or without pilots, there is always a boat stationed between the bar and the light-house, from which a red flag is waved in the direction vessels ought to proceed. The light-house is painted white, and shows a fixed light at night.

Upon arrival at Soulina the Master must go on shore, on the south side, to the Port Captain's office, and produce the bill of health, and answer all questions ; and if provided with a pilot he must write a declaration to that effect in a book kept for the purpose, after which a printed copy of the Russian regulations for the river is given him, and he is then allowed to proceed.

The current in the Danube always runs down: generally at the rate of three knots per hour—sometimes more, according to the wind. The river from Soulina to the junction of the St. George's River (a distance of about fifty miles) being very narrow in some places, barely sufficient room for two vessels to pass each other under canvass, and a fair wind not always to be had—tracking becomes necessary. The best line to use for tracking is a coil of 3 or 4-inch Manilla, which besides being pliable has the advantage of floating, and is more readily run out and in, consequently it saves time and labour. The usual mode of rigging the track line is to reeve it through a block on the fore part of the fore top-mast staysail halliards, the end being made fast on deck, then by hauling on the after part of the halliards the bight of the track line can be trised up when necessary to clear it of reeds, trees, &c., on the banks of the river.

Before leaving England vessels ought to be provided with two kedge anchors, besides good lines for warping, as there are several short bends in the river between the small Algaue and St. George's (more than are laid down in the charts) where the current runs with such strength that a vessel in ballast can hardly track through. With a loaded vessel, going up, it must be warped, and if you have not sufficient gear in readiness to do so you may lose a fair wind, and have a detention of several days.

Vessels in the river between Soulina and St. George's make fast to the banks with hawsers and stakes. The bower anchors are then of no use, and ought to be got on board; and the stream anchor hung at the cat-head in case of emergency. In coming down loaded it is necessary to have two stout spars lashed about a foot above the water, and projecting beyond the stern of the vessel, as in dropping down the short bends of the river they will take the banks first, and prevent the rudder from being injured or unshipped.

In going up in ballast, dunnage and shifting boards ought be purchased at Tolche, although it is rather more expensive than at Galatz or Ibrail: vessels are allowed to haul alongside of the south bank of the river, and discharge their ballast on it, when going up. You have an advantage, and save time, by having the shifting boards up, and the dunnage ready by the time you arrive at a loading-port.

Upon arrival at Galatz or Ibrail vessels must anchor upon the opposite side, and remain twenty-four hours before they can be allowed near the quarantine mole, either for loading or discharging.

The towns of Galatz and Ibrail are on the north side of the river, the former in Moldavia, and the latter in Wallachia; and both subject to the quarantine laws of Russia, which are very strict. A part of the bank of the river is portioned off, and walled in, for the use of vessels loading and discharging in quarantine. It is about

three-quarters of a mile in length; and about fifty yards from the water's edge is the boundary wall.

The system of loading is as follows:—There are a number of spouts in the boundary wall, projecting into the quarantine ground, through which the grain is poured, and received from them in bags, and carried by labourers on board and started down the hatchways. They work quick, and load a vessel of twelve hundred quarters in two days. The expense of labourers in loading is about ten shillings per hundred quarters; half of which is paid by the merchant, and the other by the ship.

Long spars, for stages, are on the beach; vessels have to pay for the use of them, and find their own deals for the stages. Dunnage and shifting boards are found by the ship; and mats, with the necessary bark and nails, by the merchant. A vessel of twelve hundred quarters would require 100 deals and 30 rickers, for dunnage, bulkheads, and shifting boards. The deals are three piastres each, and the rickers five piastres.

Vessels being in quarantine at Galatz and Ibrail, Masters must apply for any stores or provisions they may require to the ship-chandler's, who are in pratique. These persons keep no stores, but purchase them, and send them in when ordered; for which service they charge 10 per cent. on the amount of the bill.

In coming down the river, bring up at Tolche, and send the pilot and mate to sound the Algaue Shoal, and if there is not water enough the vessel must be lightened; and it is by far the best and safest plan to engage lighters, and take out sufficient to clear the river—without having the trouble of lightening again at Soulina. It saves time, trouble, and expense: you can then proceed without fear of taking the ground, which is of great importance, for if a vessel once takes the ground the charges are most exorbitant for any assistance rendered; besides having to go a long distance either to Tolche or Soulina for lighters. The persons contracting for lighters find labourers to take the grain from the rail in lightening; and replace it there when taking in again.

The currency is in piastres. At Constantinople the exchange is 110 piastres per £ sterling. At Soulina and Tolche the same. The Spanish Dollar is 24 piastres; Turkish Ermelick 20 piastres; and the Russian Silver Rouble 17 piastres. At Galatz the exchange is 93 piastres per £ sterling, and at Ibrail 65: the coins before mentioned, valued at these standards, are thus represented:—

Galatz at 93.	Ibrail at 56.
Ermelick=17 piastres, 15 paras	Ermelick=12 piastras, 10 paras.
Ruble=15 piastres	Ruble=10 piastres

There are 40 paras to the piastre at all the above ports.

All cash advanced for ship's use at Galatz and Ibrail is paid at the exchange of 91, so that if Masters do not take great care they will be at a considerable loss in receiving and paying.

THE PASSAGE FROM HONG KONG TO SHANGHAE.

BY CAPT. GEO. A. POTTER, AMERICAN SHIP "ARCHITECT."

VESSELS departing from Hong Kong bound for Shanghae, in the north-east monsoon, should be in good condition for contending with rough weather, and for carrying sail. Upon leaving—either the Lymoon, or the Lamma channel can be taken, the latter being preferable for a large vessel: when clear of the islands the wind will be found to be about E.N.E. generally, or as the line of the coast trends, and when the monsoon is not heavy periodical changes of wind occur: at such times vessels should be close in with the land early in the morning, and tack off shore at about 8 A.M. standing off till about 2 P.M., and on the in-shore tack standing boldly into the coast, making such arrangements during the night as will bring the vessel in a position in-shore again in the morning. When the monsoon is moderate, vessels should not stand far into the bays, as they will, by so doing, experience light winds and oftentimes calms; and on the contrary, when the monsoon is strong, they should stand in as far as possible into the bays, and then not stand farther off than is actually necessary, especially as the changes of wind above alluded to seldom occur at such times; it must also be borne in mind that vessels almost always go faster in-shore than they do off, as there is a ground-swell heaving after them when in with the land.

During the severe monsoon gales, which last about three days, vessels should seek shelter in one of the numerous good anchorages to the westward of Breaker Point, when, upon the breaking up of the gale, they can make a fresh start, and perhaps get round Formosa before encountering another, especially after the month of November. Having reached Breaker Point, stretch over for the south end of Formosa, and upon getting to the eastward, the wind will be found to veer northerly, or more as the coast of Formosa trends, and a good sailing vessel will be almost sure to fetch the South Cape or Lambay Island to windward. Upon getting in with the land, light variable winds or calms are often met with; but the strong S.W. currents will very soon drift the vessel down, when she will find the breeze coming on fresh again. In passing the South Cape in the day-time, keep close in to the land, and the nearer the shore the stronger the favorable current—there being no hidden dangers. In going round in the night, however, and when there is no moon, it will be advisable to pass to the southward of the Vela Rete Rocks, and tacking to the N.W. when nearly in the longitude of Gadd's Reef, or sooner if it is daylight, as the South Cape of Formosa is very low and rather unsafe to approach in a dark night; and again when a gale comes on and a vessel is obliged to heave too, being to the westward of the Cape, and near it, a strict look out should be kept during the night, as several vessels under these circumstances have found themselves to the eastward of the Cape in the morning, having been drifted to windward during the night and passed probably within a dangerous proximity of the Vela Rete Rocks. The current sets sometimes with incredible velocity round the Cape, and then up northward along the coast, and

the stronger the gale the stronger the weather current, gradually diminishing in strength towards the north end of Formosa. After rounding the Cape vessels should work short tacks along the east coast of Formosa keeping close in-shore to get the benefit of the current.

Having reached the North-East Cape of Formosa (the wind not having veered to the eastward, as may be sometimes the case) keep between the meridians of the Barren Islands and the Islands off the north-east of Formosa, not stretching in for the coast of China until able to make a lead in for Video or Leuconna. Thence to Shanghae follow the sailing directions given by Capt. Collinson, R.N., which will be found in "Horsburgh;" the directions given in a pamphlet entitled "Practical Instructions for Navigating the Yangtze Kiang," by Walter Macfarlane, Esq., are still more explicit, being the result of long experience in these localities.

Regarding the passage to or from Shanghae in a fair monsoon, little can be said, excepting that coasting vesssls, when without observations are in the habit of sighting the land to verify their reckoning. In the N.E. monsoon there is a constant current down the coast, running with more or less velocity according to the strength of the wind, and the wind generally blows along the line of coast, *i.e.* E.N.E. from Hong Kong to Breaker Point; N.E. in the Formosa channel; and N.N.E. from Formosa northwards. The first part of the monsoon is very strong. and frequently in the month of October it is almost an incessant gale; at a later stage, from January to May, S.E. winds are not uncommon, and they become more frequent as the season advances; there is also considerable thick weather in the latter part of the monsoon; and a S.E. wind to the northward of Formosa almost invariably brings a dense fog with it.

The passage from Shanghae to Hong Kong in the S.W. monsoon is very tedious from the frequent alternate calms and squalls, with a constant strong current up; coasting vessels generally use their kedge when there is not sufficient wind to make any progress. In working down it is well to keep in with the coast, stretching into bays and by headlands, to get out of the current, if there is sufficient wind to preclude the possibility of getting becalmed.

The Typhoon season is considered to extend from July to October; during this period of the year a barometer cannot be watched too closely. Typhoons *have* happened in May and June, though this is seldom the case. These storms appear to originate to the eastward in the Pacific Ocean, and passing the Bashee Islands, travelling to the southward of west, their centres pass nearly over the parallels of Hong Kong and Macao; a falling barometer with a northerly wind is almost a sure sign of the approach of a cyclone in this vicinity; in coming from the eastward they sometimes turn off their usual course, which is perhaps caused by the high land of Formosa intervening between the place of their origin and the China coast, and at such times they travel north, curving again to the westward: this inference somewhat accounts for the fact that Amoy is seldom visited by these storms, and they are never felt there with such a degree of severity as at the other parts to the north and south of Formosa. These cyclones are also generally preceded by a heavy swell from the N.E. to E.

A TYPHOON IN THE CHINA SEAS IN MAY, 1853.

THE following extract, from the log of the British ship *Celestial*, is furnished by CAPT. JAMES ORTT RAYMUR, as a contribution towards the history of the *Law of Storms*. He encountered the Typhoon in lat. 12° 40′ N. Long. 112° E., on his recent voyage to Hong Kong, whence he has lately returned.

Wednesday, 18*th May*, 1853, P.M.—First part of the day light southerly winds and clear weather. Midnight, calms and light airs from the N. Towards noon squally; wind generally from eastward, with heavy rain: tacked to the N. Lat. 12° 10′ N., Long. 111° 36′ E. Barometer 29·76.

Thursday, 19*th*, P. M.—This day commences with light N.E. wind and occasional squalls; took in all light sails. At 4 P.M., looking dirty to the N.E., and a swell making from the same quarter. At 8 P.M. took in top-gallant sails—ship leading to the eastward. At 11 P.M. squalls getting heavier with a head sea, reefed topsails, and wore ship to N.N.W. Midnight, wind increasing very rapidly, stowed mainsail and jib, and close-reefed the fore and mizen topsails; the wind still increasing at a fearful rate; at 1.30 A.M. the main topsail split, it was clewed up and the men were stowing it, but had to be called down to clew up the fore and mizen topsails. During the greater part of this time the barometer had remained steady, from which circumstance, coupled with the fact of Typhoons not being known generally to occur in the month of May, I concluded that it might only be a severe gale; but when the barometer began to fall, at the same time that the wind was blowing in tremendous heavy gusts, it become evident that a Typhoon had advanced considerably on us. The topsails blew away as fast as they were clewed up, as well as the foresail which had been hauled up sometime previously. At 2 A.M., the wind still on the increase, and laying the ship over very much on her broadside, cut away the top-gallant backstays, and immediately on doing this, the ship was struck by a heavy gust, which carried away the port-quarter boat, the fore and main topmast and mizen royal mast over the side, in which state she lay until about 5.30 A.M. when the barometer had fallen to 28·70—and the wind suddenly lulled from N.N.E. where it had been blowing, and it became almost a calm. We were now evidently in the centre of the Typhoon, and the ship was speedily surrounded by many hundreds of birds of various kinds, some floating on the ocean, but a very large number seeking shelter in the forecastle, the cabin, the half deck hatch, and wherever they could stow themselves. The sea had a very disordered appearance, in fact it was the most terrific thing I had ever seen; we seemed as if surrounded on every side by a mass of water-spouts; the waves having apparently no determinate direction, and the sea rising and breaking confusedly around us, throwing the spray as thickly as if it were a heavy shower of rain, while the screeching and crying of the birds added to the fearful scene. Soon there appeared slight, but vivid lightning to the southward, and the heavy banks of jet black cloud, told that the wind would next

strike us from that quarter, and all hands were busy clearing away the wreck, consisting of fore and main topmasts with yards, sails, and rigging attached, of which we were scarcely clear, when at 6.45 A. M. the wind struck us from the S. with a force which beggars my powers of description. The mizen topmast, which had stood the northerly gale, broke at the mast head instantly, and the jib-boom was carried away, as well as every stitch of sail left on the ship. It continued to blow without intermission until about 9.30 A.M. after which the wind came more in gusts, with longer intervals between, and with diminishing force: the barometer was also rising as rapidly as it had fallen. By noon the strength of the Typhoon had passed away. We lost every spar above the lower masts, the jib-boom, a whole suit of sails, and a boat. If the mast had not been cut away it is very probable the ship and all hands would have been lost. We sincerely thank God for having escaped as we did. The ship behaved admirably throughout and made no more water than usual. Lat. 12° 55′ N., long. 112°E.

Friday, 20*th*. P.M.—First part of the day heavy but decreasing wind from S.W. with heavy sea, bent fore and main courses and set them; midnight moderate S.S.W. wind, and cloudy: latter part of the day, southerly wind and clear weather; crew employed in repairing the wreck.

LEGAL DECISIONS.

ADMIRALTY COURT, *Nov.* 21*st.*—*Collision and neglecting to show a Light.*—This was a case of damage promoted by the Ann Moore against the Aliwal. The collision occurred at half-past 11 P.M. on the 9th January last, about seven miles from the Spurn Light. The statements of the parties were contradictory, and neither of the vessels had obeyed the Admiralty regulations in carrying a light. It was decided—first, that the Aliwal is clearly to blame in this case; secondly, that evidence has not been produced to satisfy us that the helm of the Ann Moore was not starboarded, therefore we cannot consider her innocent; and, thirdly, the act of Parliament has not been complied with respecting the hoisting of lights, consequently neither party can recover, and they must pay their own costs.

ADMIRALTY COURT, *Dec.* 14*th.*—*Bottomry.*—The Toivo being at Malta in February, her then master took up a sum of money on bottomry, for which he gave a bond. In August the vessel was at Uleaborg, in the prosecution of her voyage from Limerick to that port and thence to Hull. Proceedings having been instituted at Uleaborg for the recovery of the bond, and money being required for wages, necessaries, &c., the present master borrowed an additional sum, and gave a new bond for the two sums, together with interest at six per cent., the holders being invested with power to insure the vessel and freight on account of the owners, and at their expense. Dr. Lushington

gave judgment:—On the assumption of *bona fides* on the part of those who advanced their money, I have had very great anxiety to uphold the bond; at the same time it is quite obvious that it is my duty not to exceed the jurisdiction which is conferred upon me, and not to give to a bond which is not properly to be considered a bottomry bond that denomination or that effect. If a bottomry bond was given upon the same voyage, it would be consistent with the law of bottomry to allow that to be paid, and a fresh bond to be given to the amount; but I do not think that these courts have ever gone the length of saying that where a bottomry bond had been given on a previous voyage that could be done. There are items also in this bond which are not properly the subjects of a bond, and which tend to show that the transaction was one of mortgage, and not bottomry. It is not in my power to pronounce for the validity of the bond. I have no jurisdiction if it is a mortgage.

MELBOURNE CRIMINAL SESSIONS.—*Conviction of a Master.*—In September last, John Marriot, late master of the brig United, of Liverpool, was found guilty of negligently, and while in a state of intoxication, running the vessel on a sand-bank in making the port, to the eminent peril of the passengers and crew. Mr. Justice Williams in passing sentence commented on the serious character of the offence; the severest sentence of the law would be inflicted—imprisonment and hard labour for three years.

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

Issued by the Admiralty, Trinity House, and Foreign Governments.

Notice to Mariners, from Nov. 1st to Dec. 26th, 1853.

Beacons and Buoys; Scotland.—Five Beacons have been erected in the following positions:—One at the entrance to Sanda Harbour.—One at the Small Isles of Jura.—Three in Easdale Sound.

Two Buoys have also been moored in Easdale Sound.

The Beacon at the entrance to the anchorage on the north side of the Island of Sanda, in the Firth of Clyde, is erected on the rocky point which projects from Ben-a-chauie Head. It consists of a cast-iron pillar surmounted by a ball, and is 12 feet in height above the rocks, which are dry at low water. It is painted RED.

The Beacon at the Small Isles of Jura is erected at the South Entrance to the Anchorage on the East side of the Island of Jura, and the fairway to the Anchorage lies betwixt the Beacon and the South-western point of Gore Island. It consists of a cast-iron pillar, surmounted by a ball, and is 18 feet in height above the rock, which is dry at low water. It is painted RED.

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The Beacons in Easdale Sound have been erected in the following positions:—One on the East Rock at the southern entrance to the Sound. One on the South Rock. One on the Middle Rock.

These three Beacons consist of an open framework of iron, surmounted by a ribbed ball, and are 17 feet 6 inches in height above the rocks, which are dry at low water. They are painted RED.

The Buoys in Easdale Sound have been moored, one on the Six Feet Rock at the south entrance to the Sound, and the other on the North Rock at the north entrance to the Sound. They are both small Buoys, with perches fixed to them.

No toll is exigible for any of the above seamarks.

Lighthouse on Cape Machichaco. — The Lighthouse on Cape Machichaco, about four leagues to the east of Bilbao, ceased to exhibit a light from Nov. 14th, until the repairs of which it stands in need are finished.

Ice in the Cattegat and Change in Lightships.—The Lightships in the Drogd, and the Lœssó Channel, are ordered to remain upon their respective stations as long as the ice permits. The Lightships at Anholts Knob and at the Kobbergrund will, on the contrary, be laid up at the usual time, the 21st December. Further particulars will be given respecting the time when the Lightships at Lœssó Trindel will be removed from their station. A White Flag, with a blue perpendicular stripe, will fly from the Lighthouse at the Skaw, when there is ice in the Cattegat; and in consequence thereof the Lightship in Lœssó Channel has left her station. A similar Flag will also fly from Haustholm Lighthouse, when it is known there that there is ice in the Cattegat.

New Light at Storjungfruns.—The Notice issued on the 4th March, concerning a change to take place in the manner of lighting the "Storjungfruns" Lighthouse has been carried into effect, so that the new method of lighting commenced on the evening of the 28th of October last, and will continue to be lighted during the same period as the other Lighthouses of Sweden. The Lighthouse is built of granite, and "lime dashed," to a height of 46½ feet, where the balcony begins, and thereupon is erected a breastwall of fire-proof tiles, which supports the lantern. It gives, while burning, a stationary strong light at the height of 57 feet above the ground, which is 31 feet high, consequently the flame is 88 feet above the level of the sea, and lights the horizon from about N.W. by W. ½ W. to N.E. and S. to S.W. ½ S. by the compass. The light should be visible from the deck of a vessel, in clear weather, at a distance of 3½ Swedish miles (sea), or 14 English minutes. Latitude 61° 9′ 56″ N., and in Longitude 17° 20′ 15″ E. from Greenwich.

Wreck near the Maplin Lighthouse, Dec. 15th.—A Green Buoy, marked with the word "Wreck" has been placed about 15 fathoms to the North of a vessel sunk near the Maplin Lighthouse. The Buoy lies in 11 fathoms at low water spring tides, with the following com-

pass bearings, viz.:—Maplin Lighthouse N. by W. ½ W. distant 4-10ths of a mile; West Barrows Buoy S.W. by W. ½ W.

Lights and Signals of the Port of Leith.—From and after Dec. 15th, 1853, the following Lights are to be exhibited at the Port of Leith:—

1. At the Outer End of the West Pier, from sunset to sunrise, a White Fixed Light, 28 feet above high water of spring tides; and the arc illuminated extending from N.W. ½ W. to E. ½ S.

2. The present Fixed Red Light at the Old Light House on the Inner part of the East Pier, also from sunset to sunrise.

3. When there are eight feet of water on the Cill of the Old Dock, a small Green Light will be shown under the Light on the West Pier-head; and when the Gates of the Victoria Dock are open the Green will be changed to Red.

4. A Red Light will be shown on each side of the Victoria Dock-head when the Gates are open.

The Day Signals indicating the depth of water will be exhibited from the West Pier-head—the first, a Blue Peter when there are eight feet of water on the Cill of the Old Dock; and when the Victoria Dock is open, a Ball will be hoisted on a flag staff on the East-head of the Dock. The depth of water at the Low Water Landing Slip within the Outer End of the West Pier is, at low water of ordinary spring tides, 9 feet, and of ordinary neap tides, 12 feet.

Mediterranean Sea—Coast of Valencia—Lighthouse of the Isla Plana or Tabarca (Province of Alicante.)—From the 1st of the present month (January), a new Lighthouse, established on the "Isla Plana or Tabarca," and at a distance of 2010 feet, Burgos measure, from the Eastern point of the Island, and of 560 feet from the sea shore in the Northward direction, will be lighted every night from sunset to sunrise: elevation 98·9 feet. Latitude 38° 10′ 13″. N. Longitude 5° 45′ 38″ E. from the Observatory of St. Fernando.

Lights on the French Coast.—*Alteration at Baleines Point. (W. Coast.)*—The present Light which revolves in ¾ of a minute on Baleines Point (Ré Island) 46° 14′ 41″ N., 1° 33′ 27″ W., will be discontinued, and from the 15th of the present month (January) the two following Lights will be established:—

1. A Revolving Light on the same Point, with intervals of only ½ a minute between the eclipses: visible 20 miles: the eclipses not total within the distance of 10 miles.

2. A Fixed Light on the Rock called the Haut-Banc du Nord, 46° 15′ 51″ N. 1° 34′ 59″ W., 1½ mile N.W. of Baleines Point, visible 13 miles.

Portrieux. (N. Coast.)—Since June last a small Fixed Red Light has been exhibited on the Pier; 48° 38′ 53″ N. 2° 49′ 10″ W; visible 13 miles.

Cherbourg Breakwater.—A temporary Red Fixed Light is placed on the W. head of the Breakwater: visible 10 miles, and a temporary Green Fixed Light on the E. of the same.

Lighthouse on the Fastnet Rock; S. Coast of Ireland.—The Lighthouse Tower is erected on the summit of the Fastnet (or Fastness,) Rock, in Lat. 51° 23′ 18″ N. and Long. 9° 36′ 25″ W. bearing from the Old Head of Kinsale, (new Lighthouse on South point) } W. ⅞ N. distant 42½ nautic miles.

„	Staggs Rocks, (of Castlehaven)	W. ⅞ N.	„	15¼	do.
„	Cape Clear Island, (S.W. Point)	W.	„	3 9/10	do.
„	Calf Rock	S.E ¾ S.	„	26¾	do.
„	Mizen Head	S.E. ¾ S.	„	8½	do.

The Light which will be exhibited from the 1st January is a Revolving Bright Light, showing its brightest appearance once in every two minutes, increasing and diminishing in strength gradually, and at short distances will not be totally obscured between the flashes: 148 feet over the level of the sea. The Light will be shown all around, and in clear weather visible seaward at the distance of 18 miles. The Tower is circular, 92 feet high, and at mid-height marked by one broad horizontal Belt, colored Red. On and after the exhibition of the Light on the Fastnet Rock, the Light heretofore shown from the Cape Clear Light-house, will be discontinued. Bearings stated are magnetic —Var. 28° 20′ W.

Coquet Island Light and Hauxley Point Buoy.—On or about the 16th of January next, the line of direction of the Hauxley Point Buoy from the Coquet Island Light House, will be denoted in the night time by the exhibition of a Red Light, in the said Light House, and Vessels, by keeping to the Eastward of such line of Red Light, will clear the Bondicar and Hauxley Point Shoals.

NAUTICAL MEMORANDA.

Discovery of Islands in Torres' Straits. Nov. 5th, 1853.—It has been officially notified that Capt. Parsons has discovered, near the southern entrance of Torres' Straits, islands not laid down on the charts. He has named them "Willis' Islands," and gives the following positions:—

Westernmost island Lat. 16° 55′ S., Long. 149° 43′ E.

The Easternmost is about 8 miles to the North and East of the former, Lat 16° 53′ S. Long. 149° 51′ E.

Change in the Magnetic Variation at Aden. Nov. 17th.—It has been officially notified that the result of recent observations show that the variation of the compass at Aden, which in 1834 was 5° 2′ W., has since that period diminished, being now only 2° 49′ 20″ W., which is the mean of observations taken in September and October, 1853. From this fact it is almost certain a greater change, (probably a ¼ of a point,) has taken place in the North part of the Red Sea; and it is also probable that the variation has changed along the African, Arabian, Persian, Muleran, Beloochistan, and Indian Coasts.

Additional Time Signal at the Cape of Good Hope. — The Astronomer Royal at the Cape of Good Hope has given notice that the time ball attached to the Cape Observatory, not being visible from the whole of the Table Bay anchorage, owing to the intervention of buildings, another has been established at the Lion's Rump signal station, so as to command the entire sweep of the Bay, thus affording the means for regulating the chronometers of all the shipping.

The observer should note the time by his chronometer when the ball *begins* to fall, and by subtracting one second from that time he will have the moment of 1 o'clock P.M. mean time at the Cape Observatory.

Cape Observatory Lat. 33° 56′ 3″ S. Long. 18° 28′ 45″, or $1^h\ 13^m\ 55^s$ East of Greenwich.

Damage to Vessels' Cargoes.—The following letter from the agents for Lloyd's at Shanghae, on the subject of damage to vessels' cargoes arriving out at that port from England, has been posted in the underwriters' rooms. The principal cause of the evil is to be found in the great increase of weight in the goods by the severe hydraulic pressure upon them when being packed, with a view to compress them in as small a compass as possible to save freight:—

"SHANGHAE, *Aug.* 25*th*, 1853.

"Sir,—As Lloyd's agents at this port we feel it incumbent upon us to address you, to call your attention, and that of the underwriters, to the very heavy claims for particular average so often now made upon manufactured goods from Great Britain to this place. Lately, and more especially this season, many, or indeed most, of the vessels have been loaded so deeply with cotton goods as to be scarcely safe, and when in this condition they happen to experience severe weather, as several of them did this year, the damage is always very serious. The Monarch, Ashmore, Geffrard, and Eclipse, from Liverpool, and the Cherokee and Kingston, from London, are all instances of this. That this arises in a great measure from their being overloaded is apparent from the fact that the same vessels go home with tea and silk often without the least damage. We may further mention that the iron hoops used in securing bales of shirtings, if touched by seawater, generally corrode and spoil the whole bale, unless either painted or made of galvanized iron. Hoping these remarks may be of interest, we are, Sir, your obedient servants,

"DENT, BEALE & Co., Agent to Lloyd's.

"*To* CAPT. G. A. HALSTEAD, R.N., *Sec. to Lloyd's.*"

New Shoal in S. part of China Seas.—Extract from the Log of the Flora Muir, of Glasgow, Capt. C. F. Glover. May 9th, 1853:—At 6 P.M. the Peaked Domino, bearing W. by S. ¾ S., and the East of Lingin S.W. ¾ S., passed the hull of a vessel laying on her broadside, with two bright lower masts and bowsprit standing; apparently bilged on a rock; the wreck bearing from the ship S. by W. ½ W., and about 12 miles distant from East end of Lingin.

[We have carefully examined the various charts of this portion of the China Sea, and cannot find any shoals laid down in the locality to which the above extract refers. To the N. of the East point of Lingin, distant 6 miles, is East Domino, and E of the same point, distant 11 miles, is a patch marked "Coral," with soundings from 10 to 12 fathoms. The Shoal to which Capt. Glover refers is evidently quite distinct from either of these, being situate in about Latitude 0° 6′ S. Longitude 105° 10′ E., and is directly in the route of vessels.—*Ed. Mer. Mar. Mag.*]

NAUTICAL NOTES.

Peninsular and Oriental Company's Screw Steamer, Colombo.—On the 8th December last a number of scientific gentlemen attended at Southampton on board the above ship, to make a trial of her speed. The Colombo, under charge of Capt. George Brooks, steamed towards Stokes-bay, where, after having previously stretched out as far as the Nab Light, two runs were made at the measured mile as follows:—

	Min.	Sec.	Knots.	Revolutions.	Pressure.	Vacuum.
1st run in	4	46, equal to	12·587	24	15lb.	26½lb.
2d run in	5	16, equal to	11·392	24	15lb.	26½lb.

the average being 11·989, or nearly 12 knots an hour, equal to a little under 13¾ statute miles. During the trial the actual power exerted by the engines, as exhibited by the indicator, was 1,281 horses. The result was considered satisfactory, and the speed quite as great as could have been anticipated. This steamer, a remarkably noble and handsome ship, was built by Mr. Robert Napier, of Glasgow, and her engines were also supplied from his factory. Her dimensions are as follows:—extreme length, 305 feet; length between the perpendiculars, 280 feet; length of keel, 263 feet: breadth, 37¼ feet; extreme depth, 32½ feet; depth of hold, 18 feet; tonnage, 1,872 tons, builder's measurement, equal to 1,837 25 95ths old measurement; engines, 450 nominal horse-power. As a specimen of engineering skill and excellence of workmanship and finish, the engines of the Colombo will stand a comparison with any naval machinery now afloat. They worked most admirably, and the boilers, constructed after the patented principle of Messrs. Lamb and Summers, gave a full supply of steam without extraordinary exertions in stoking. The screw used to propel the Colombo is the common three-bladed one. The engines have cylinders of 72 inches diameter, with a 5 feet 6 in. stroke. The draught of water at the trial to-day was 16 feet 3 inches forward, and 17 feet 6 inches aft; coals on board, 450 tons. The Colombo can, however, carry 650 tons of fuel, besides about 550 or 600 tons of measurement goods, thus showing a great capacity for freight, the latter being an element of material importance in a commercial point of view. From 100 to 120 passengers can be accommodated, the fitting up and arrangements of the saloons, sleeping berths, ladies' cabins, promenade deck, &c. being of the most convenient and excellent description. The main saloon, which is 72 feet in length, is beautifully

fitted up and ornamented, and can comfortably dine 100 persons at one time. The Colombo is intended to be despatched to India, to take her place in conveying the mails between Suez, Aden, Calcutta, Madras, Ceylon, &c., as soon as she has made one trip to Gibraltar, Malta, and Alexandria, with the India, China, and Mediterranean mails.

The barque Stratford, with the June mails, arrived at Sydney, after a passage of 106 days from London. Captain Forrest reports that the wind and weather were alike far too unfavorable for allowing the ship to prosecute the voyage in the time mentioned in the mail contract (82 days.) She had to beat all the way down the Channel, which occupied one week, after which she made an excellent run to the Line of 22 days, making in all 29 days from the docks. A good S.E. trade then carried the Stratford to 20° S. and 30 W°, and from that situation Captain Forrest states that he had to contend with a series of light variable weather, heavy gales, and sudden calms. The meridian of the Cape of Good Hope was passed on the 63rd day, and from thence to Sydney she did not have 24 hours' good run; a favorable breeze springing up and dying away in a few hours was an event of almost daily occurrence between the two places.

The Port of Lynn.—A notice from the Lords of the Treasury constitutes Lynn a port, and the wharf at Lynn Regis a legal quay. The limits of the port are declared to commence on the northern side of the bridge across the Exu Brink Cut, called the Free-bridge, in the county of Norfolk, and from thence proceed along and include the whole of the river Ouse, to its termination in Lynn Deeps; thence, in a north and east direction, along the coast of the said county, to a place called Brancaster Staith, in the said county; and from thence, in a supposed straight line, to sea, in a north-westerly direction, to 14 fathoms water, thence in a supposed straight line in a south-westerly direction to a place called Lutton Sluice, in the county of Lincoln; thence, in a south-easterly direction, along a supposed straight line, drawn from Lutton Sluice aforesaid, to Terrington Church, in the aforesaid county of Norfolk, and so along the coast of the said county of Norfolk to the western side of the said river Ouse; and shall include all rivers, bays, harbours, fleets, and creeks within the said port, communicating with or discharging themselves within the said limits.

NEW BOOKS.

The Magnetism of Ships, and the Mariner's Compass; by William Walker, Commander R.N.—Piper Brothers & Co., Paternoster Row, 1853.

THIS is a rudimentary exposition of the induced magnetism of iron in sea-going vessels, and its action on the compass, in different latitudes and under diversified circumstances. The Author is no mere theorist—many years spent on the ocean, during which period he has

been a careful observer, have given him a practical knowledge of his subject, and fully alive to its importance, he examines it in a manner that must command attention. We perfectly agree with him when he says "that, if more were known about the magnetism of ships and the mariner's compass, fewer misfortunes would befall the shipping of this and of other countries." Only of late years has the magnetism of ships received that consideration which ought long since to have been extended to it, and much has yet to be learnt on this branch of the sailor's art. The present treatise, written in a clear and comprehensive manner, is a judicious contribution to science, and ought to be read, (we may also add thoughtfully studied) by every one who has, or is likely to have, the responsibility of navigating a ship—more especially in these days, when steamers and iron-built ships are multiplying on us with such rapidity.

Indian Commercial Tables of Weights, Measures, and Money; compiled by James Bridgnell, Assistant Accountant, Calcutta Mint.—P. S. D'Rozario and Co. Calcutta, 1852.

THE British Possessions in the East are not characterized by uniformity in the weights, measures, and money used in the several Presidencies, and as the Author remarks in the preface—"A set of tables of general utility to all classes of persons engaged in business, but more especially to the Commercial, Mercantile, Trading, and Shipping community, has long been a desideratum." A great want is now well supplied by the publication of the present volume. Tables previously incomplete or which had to be sought from many different sources, are here brought together in a very systematic manner, while at the same time considerable labour has been bestowed on them, with the view of ensuring accuracy. Not the least part of their value consists in their utility to all masters and mates of "country ships." The Appendix gives a well-arranged set of examples illustrating the use of the Tables.

1.—*The Mercantile Navy List; corrected to October* 31*st*, 1853. *By the Registrar-General of Seamen. Bradbury and Evans, London.*

2.—*The Ship Master's Guide; (a New Edition,) containing ample directions for making the returns, and otherwise complying with the provisions of the Mercantile Marine Act, the Merchant Seamen's Act, &c. &c. By the Registrar-General of Seamen*—1853.

THE first book will henceforth be issued "by authority," having been adopted by the Lords of the Committee of Privy Council of Trade. In addition to the list of masters and mates who have passed their examinations, it will be used as a channel for promulgating regulations and orders affecting the shipping interests.

The second is what it professes to be—the matter is well arranged and the various requirements of the Acts are judiciously abridged and explained. The Analysis will be found useful for reference to the Acts.

Masters and owners should have in their possession both works, as the information they contain will save time and trouble.

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

FEBRUARY, 1854.

PILOT, TRACK, TRADE WIND, AND STORM CHARTS OF THE ATLANTIC.

If there be a result of the increase of knowledge that stands out more prominently than any other it is the saving of time that has been so strikingly accomplished of late years, to which we may also add the contracting of space as it were, so as to give rise in *certain* applications of our knowledge to the saying "that both time and space are annihilated."

There is no aphorism so trite, nor so extensively quoted, as that "knowledge is power," yet it is ever fresh and constantly applicable. In these days of the increase of knowledge, the increase of power is seen to be commensurate. Processes in the arts that were tedious and expensive are thrown aside—others, resulting from the increase of knowledge, are substituted; they are found to be rapid and profitable: journeys that occupied days are now performed in hours; nor is the ocean exempt from participating in the advantages of the increase of knowledge—tedious voyages have been shortened, dangerous storms avoided, and the mariner is able to chime in with the rest of the world, and contribute his testimony to the fact that "knowledge is power."

While, however, an increase of knowledge contributes to render man a more powerful agent, this knowledge must be attained. It must be sought after—it must, to employ a figurative expression, "be fished up from the ocean of truth," and when thus obtained it must be turned to advantage. There are two directions in which maritime knowledge may be advantageous to the seaman: in shortening his voyages, and in his avoiding storms.

In order to make speedy passages it is a duty incumbent on the commander of every vessel to endeavour to the utmost of his ability to add to the amount of information already possessed, in respect to that portion of the ocean he undertakes to navigate. Our trans-atlantic brethren have set an excellent example in this good work,

and we may to a great extent profit by their labours. At the same time let us take nothing for granted, but go to work ourselves, and in the same way accumulate information of a similar kind, till the great highways of the ocean stand out before us in bold relief, and we can with considerable certainty calculate on making an expeditious passage.

What has been done on the other side of the Atlantic? Every entry in a seaman's log has been treated as a scientific observation—an observation capable of increasing our knowledge. Nearly sixteen years ago, or even earlier, it was proposed, *in this country*, that an office should be established for the reception of *all* logs after their immediate interest to the owners had ceased, in which they might undergo discussion. Nobody thought a solitary entry of the direction of the wind, or the course of the ship, could possibly have any bearing on any great, but remote scientific or commercial object. The idea was allowed to *slumber*, but our neighbours caught it, fostered it, and worked it out. They have the credit, and we are now glad to avail ourselves of the result of an investigation through the medium of a system, officially set on foot four years after a distinct proposition was made in this country for preserving all logs, with a view to render them available in any inquiry that might be deemed desirable.

In what do the great commercial interests of this and other countries benefit by the discussion or examination of seamen's logs, and how can the entries of the wind and weather affect voyages not yet undertaken? This question we shall now proceed to answer.

Lieutenant Maury, of the United States' Navy, has efficiently worked out the idea of rendering seamen's logs available in a scientific inquiry, by dividing, in the first place, the surface of the ocean into squares of five degrees: *i. e.*, 5° of latitude by 5° of longitude. Taking any particular square, 5° to 10° N. by 15° to 20° W. for instance, he has examined every log that has come into his hands, and ascertained the winds and calms experienced by every ship that to his knowledge has sailed through this particular square. The result of this examination he has inserted in a wind-rose as it is termed: *i. e.*, the square is divided into 16 compartments by lines radiating from the centre. Each of these compartments represents two points of the compass thus, N., NNE. NE., &c. By means of five concentric circles these compartments are subdivided into sixty-four, in each of which three numbers are inserted, so that *twelve* separate numbers can be inscribed in each compartment appropriated to a particular wind, correspondent with the prevalent winds in each month. The central space takes twelve numbers, they are arranged around its circumference and represent the calms for each month, and twelve numbers exterior to the wind-rose give the number of observations, or the number of times in each month the wind has been known to blow in the particular square under consideration.

This arrangement is extremely valuable; it brings together *in one view* the experience of *all* the vessels that have passed through the square, and have furnished information to the office:—thus in the square noticed above, viz., 5° to 10° N., 15° to 20° W., the direction of the wind has been observed 1844 times; calms having occurred

120 times. A glance at the figure shows that during the months of June, July, and August, the prevailing winds are S., SSW., and SSE. The wind has been observed in this square during these months 1126 times, of which it blew 932 times from between SSE. and SSW., viz., 263 times from SSE., 394 from S., and 275 from SSW. The remaining observations during the three months are thus distributed over the points of the compass:—SW. 30, WSW. 72, W. 10, WNW. 5, NW. 2, NNW. 8, N. 2, NNE 2, NE. 2, ENE. 7, E. 7, ESE 26, and SE. 21. It is true fewer ships passed through this part of the ocean in the winter months, as compared with the summer months, and thus a greater confidence must be awarded to the quotations above, and this shows how important it is for all to co-operate, so that, if possible, the numbers exterior to the wind-rose should be nearly equal.

Lieutenant Maury styles these "Pilot Charts," and they well merit the appellation—they clearly indicate for certain months the winds a commander may expect to meet, and he can accordingly judge in an instant if such winds are favourable or otherwise to his course. But the Lieutenant has not stopped here—he has proceeded still further in rendering the knowledge he has obtained available to the mariner, by combining for each month in the year the winds and calms in each square of the ocean upon a plan that must necessarily be productive of immense advantage; thus he has constructed a wind-rose for each square of ocean for each month, in which he gives four orders of figures. The centre is occupied by the number of observations observed in the month, and just below it is placed the per centage of calms. A circle of figures follow that express the per centage of winds for the month, and at the extremities of the radii representing the wind are placed the number of miles that adverse winds would compel a vessel to turn out of her way if she attempted to sail 100 miles direct on the course on which these figures stand. To explain this arrangement we take the wind-rose of 50° to 55° N., 25° to 30° W. for the month of July; 41 observations contribute to the results in this square, the greatest per centage of winds being 53·7 from WSW., *i.e.*, a commander in attempting to sail through this square 100 times on a WSW. course, would find the wind 54 times dead a-head; he would consequently be turned 93 miles out of this course by sailing through this square 54 times out of the 100. Now with the "Pilot Charts" before him, and calculating his course *before hand*, he finds the next square on the East more favourable for a WSW. course—the head winds being only 20 in a 100. The west square, viz., 50° to 55° N., 30° to 35° E., is still more favourable, as he would meet with head winds 11 times only in the 100.

But head winds are not the only obstacles a seaman may meet with—he is often becalmed, and this most seriously interferes with his course. Each wind-rose contains the per centage of calms he is likely to experience while sailing through the square, and this must be combined with the per centage of head winds he may meet, together they form the most effective obstacle in his way. Again—not only do head winds and calms oppose him, but "slants" turn him off

his course. Lieutenant Maury defines "slants" to be "winds that though not dead a-head will nevertheless head a ship off her course—thus a vessel that wishes to head E. a wind at NE. or S.E. would be a slant." Now in calculating a course from the charts regard must be had to the per centage of the "slants" the ship is likely to encounter, and from the whole such squares are to be adopted that give the greatest probability of making the shortest passage.

There can be no question that for making a good course those squares should be adopted that combine these advantages—a large per centage of winds aft, with a small per centage of head winds, slants, and calms. By adopting this plan not only are obstacles lessened, but fair winds obtained. Let us see if such a mode be practicable.

The extent to which we have seen Lieutenant Maury proceed must be characterised as invaluable. By means of these charts every commander has it in his power by a glance to adopt a favourable course, but the Lieutenant was not satisfied with the immense amount of labour that must have been expended in producing these charts. He goes further—he even calculates the routes not only on an average for the year but for every month, between New York and Europe, out and home. We have now before us the route from New York to Europe for June, the true distance run from Sandy Hook to the Channel is 3184 miles, on a course mostly ENE., the squares sailed through are 13—the per centage of head winds is given, also the north and south winds likely to turn the vessel off her course—the fair winds are mostly between 80 and 90 per cent., and calms few. Of this route it is said, "according to the charts this is the best track yet developed, and ought to give the shortest passages."

The Lieutenant recommends that a commander adopting these routes should take a chart before sailing, and project the route for the month during which he sails; thus he has before him as he sails along a bird's-eye view of his path; but here a caution is necessary—the track on his chart is an average one, it has not been sailed over by any vessel. Some parts again are better determined than others, *i.e.* but few observations have contributed to the determination of the course through some squares, while 4 or 500 may have been consulted for others—the whole thing is an approximation to an average or mean track, which under all circumstances should be looked upon as a *guide* to the mariner, but by no means as a mark "to keep his keel upon." To explain, there is scarcely any part of the ocean on which he may not expect to be turned off his course by head or slant winds; however close he may approximate to the average track, somewhere or other during his voyage his fair wind may fail. If on a particular course, he has from the charts, (*i. e.*, from the experience of the vessels that have preceded him on this course,) 5 per cent. of head winds, he may be one of the five unfortunate commanders out of the hundred that falls in with them. If the ratio be pretty equal, in every hundred cases five vessels on that particular course *must* meet them, and if his be one then he loses the average track. Under these circumstances what is he to do?—try to get upon the track again? By no means should he

endeavour to do this—he would lose much time. Remember there is no virtue in the tracks further than as a *guide*. Some navigators have lost much time when headed off the track in trying to get back to it; their winds have been fair for the prosecution of the voyage, nevertheless they have converted such to head winds by beating back *on the open sea* in order to regain the track. Never mind if your head wind should turn you aside you can sail *parallel* with the track, and this the Pilot Charts will enable you to do, for should you be so far driven from it as to find yourself in a neighbouring square, the wind-rose will soon indicate thc course for you to adopt, in order that you may come obliquely upon the average, or strike out from your new position a more expeditious route. Again, in your new locality you may still fall in with head winds which may drive you once more on the average track.

Mistakes are very liable to occur when the wind sets in dead a-head of the ship's course. Under such circumstances, what tack is she to be put on? Lieutenant Maury recommends the tack that will enable her to stand to windward, or that quarter to which it is likely, as determined from the Pilot Charts, the wind will change. In some of the routes this quarter is expressed by the letter *w*, but it can be determined by a mere inspection of the table, the greatest per centage of "slants" appertaining to the windward quarter.

In sailing from the United States to Europe, from 43° 31′ N., and 35° W. to 45° N. and 30° W., the best average course is ENE., with "slant" northerly winds 19 in the 100, while only 4 in the 100 have been found from the southward. Two vessels, that had been in company on their way to Europe, arrived in this locality, and found the wind came out dead a-head—they adopted different tacks, one turned his ship's head *northward* on the starboard tack, and arrived in port *ten* days before the other that turned his ship's head southward on the port tack.

Head winds, however, may arise from other circumstances than the ordinary aërial currents of the atmosphere; a rotatory storm may so meet the ship that the hurricane wind is directly in her teeth, at the same time that the windward "slants" in Maury's Tables are in the area of the gale. Such cases occur, and it is clear that, by putting the ship on the tack recommended, the commander would involve himself in the gyrations of the hurricane were he not to be on the alert. It may be he meets the wind on the circumference of the gale, his course is WSW. and wind WSW., the windward "slants" are northerly—he puts the vessel on the port tack, she is in the right-hand semicircle, and her head soon draws to the centre, with the wind veering to west, increasing in force, and a falling barometer. This announces to him the presence of the cyclone, but he is favourably situated were it not for his tack. As soon as he is aware that he is involved he should lie-to on the starboard tack, and if he meet the gale, as we have supposed, he will soon be able to resume his course, as he will fall in with northerly winds, otherwise he may expect to lose a mast or two ere he gets clear of the cyclone.

The routes between Europe and America, both out and home,

published in "Lieutenant Maury's Sailing Directions." are perfectly available for all the purposes of our American traders, but it ought not to be forgetten that they are regarded by the Author as approximations only, and it is quite possible in the present state of nautical science to improve them. Every commander that sails between the two countries can add his experience, and he may himself improve his own copy of the Pilot Charts. Every wind that blows will find an appropriate compartment, and although perhaps a single vessel will scarcely alter the averages as set down, it may be otherwise with the routes, some variations may obtain in the head winds, &c., and his own actual route may be more advantageous than the mean, for it is clear that if we have an average track from 100 vessels, 50 of these *may* give upon an average a quicker passage than the remainder. Let us do all in our power to improve the Pilot Charts.

The next department of the Lieutenant's labours is the monthly routes from New York to the Equator. These of course are not available for ships leaving Europe for the Southern Hemisphere, with the exception of the passage of the Equator, and in this respect the information is valuable: The greatest difficulty a navigator has to contend with arises from the belt of calms north of the line; he is frequently perplexed with light baffling airs, calms, south-westerly breezes, &c., which greatly hinder him. The examination of seamen's logs, as noticed above, has afforded important information—the extent of the doldrums, as they have been expressively termed, has been determined for the four seasons of the year; the existence during the summer of a system of south-westerley breezes, partaking somewhat of the nature of a south-westerly monsoon has been ascertained—they are met with in the equatorial regions of the North Atlantic, and are more or less coincident in position with the calms. Perhaps one of the most important of these determinations is the extent and shape of the doldrums in summer and winter, spring and fall. In winter the northern boundary extends nearly in a straight line, from 10° N. 20° W. to 5° N. 30 W., and beyond this meridian gradually approaches the Equator to about 2° 30′ N. In spring the doldrums are more contracted, the most northern point of the boundary not extending beyond 7° 30′ N. in 18° W. From this point a straight line drawn to 2° 30′ N. 35° W. will give the northern edge in spring. In summer we have the doldrums entirely north of the line, and probably occupying the greatest extent of oceanic surface. A line stretching from Cape Verga to the Cape de Verde Islands will form the NE. edge, the highest point being 16° N. 22° 30′ W. From this point a line running to 10° N. 42° 30′ W. will give the NW. boundary, south of these lines the mariner in summer may expect to meet with calms, light baffling airs, and south-westerly breezes. The southern boundary consists of three lines, commencing at 5° N. 15° W., the first terminates at 3° N. 18° W. — from this point the second stretches to 2° N. 28° W., and the end of the third is found 8° N. 43° W. The greatest breadth of these calms in summer is consequently 14°. In autumn they are somewhat contracted, the north-east boundary extending from 9° N. 15° W. to 14° N. 21° W., thence the boundary is

parallel to the Equator as far as 25° W.—from this point 14° N. 25° W. the north-west boundary extends to 10° N. 43° W. In like manner the southern boundary in autumn is within that of the summer. Commencing at 8° N. 15° W. the southernmost point is met with in 3° N. 22° 30′ W.—from this point a line to 8° N° 43° W. will mark the south-west boundary.

There are two considerations that weigh with a navigator in his crossing the line; his fighting with the calms north of the Equator, and his avoiding the westerly current off Cape St. Roque. Lieutenant Maury says " the current so much dreaded off St. Roque is a good deal of a bugbear. Navigators have been frightened at this current ever since some transports were cast ashore by it some time in the last century. * * * * Now my investigations show that there is rarely off Cape St. Roque, and in the fair way from the Equator south, either a sweeping or a horsing current. Indeed many accurate and close observers pass there without reporting any current at all; and though navigators should always be on the look out for a current there, and should always make allowance for one that is to set them on land, yet when they do encounter a current there they may be assured that, as a general rule, it is neither difficult to overcome, nor dangerous on account of its set."

With this knowledge of the current off St. Roque the Lieutenant directs attention to the passage of the Equator at the point best calculated to clear the Cape and avoid as much as possible the doldrums; this point he finds in the neighbourhood of 30° W., and recommends, in winter and spring, when the quickest passages are made, a direct south course from 5° N. to the line, his average track crossing the line between 29° and 31° W. In summer and autumn he advises a little easting to be made, so that the parallel of 5° N. may be crossed rather more easterly than the line. From the logs of several vessels that have adopted the Lieutenant's routes the mean longitudes of crossing 5° N. and the line are as follows:—

May......5° N.	29° 37′ W.,	the line in	30° 20′ W.
June......5° N.	28° 7′ W.	„	30° 42′ W.
July......5° N.	28° 15′ W.	„	31° 30′ W.
August...5° N.	26° 57′ W.	„	29° 52′ W.

We have before remarked that the Lieutenant's tracks *to* the Equator are not available for European vessels; here then we have a blank to fill. What Maury has done for his country ought also to be done for ours, and why not the Merchant Service apply itself in right earnest to accomplish this good work? There can be no lack of materials—our African and Australian Colonies require a regular supply of traders—our Indian and China trade is extensive, and to meet all the requisite demands on the mother country we have merchant vessels continually passing on this route. The examination of every log would soon develope the quickest passages for us, as it has done for America. It only requires the necessary steps to be taken: First, for the reception of abstract logs, kept as nearly as possible according to a certain form; and, second, for the systematic examination of such logs. Commanders in the Mercantile Marine let us

urge upon you the importance of undertaking this matter for yourselves—remember the old adage, " if you want a thing done well you must do it yourself." We never yet knew of an undertaking that was set on foot in a free and unfettered manner but what was eminently successful. Be determined to work out the great problem of speedy passages to all parts of the world. Keep your logs that they may always be available—forthwith determine on, obtaining a place of deposit for your abstract logs, and let them be rapidly and efficiently discussed, and the Merchant Service of this country will not only retain the position of the most enterprising mercantile marine, but also take that of an active scientific service. Let not the word scientific alarm you—science and commerce go hand in hand. Commerce has ever been the cradle of science; when commerce has *apparently* needed not the appliances of science the latter has flagged. A few speculative philosophers only have cultivated scientific research and their labours for some time have been unproductive; but let commerce say we want the assistance of science, or let commerce be awakened to the value of the help of science, and then the latter revives again—she lifts up her head—her generous patron fosters her—and, in return for the care bestowed on the cultivation of science, she pours into the lap of commerce a harvest that not only enriches, but raises her among her fellows. A mercantile marine, deeply imbued with the love of science in the true sense of the word, must be one of the greatest in the world.

The route from the line to the parallel of Cape St. Roque requires more attention than ordinary on the part of the mariner; it forms a common part of the great highway of the ocean for *all* ships going South, and is the turning point of the passage. In the routes laid down by Lieutenant Maury, for every month, he has given an average SSW. course from the point of crossing the Equator to 9° S., and he recommends navigators, when they have arrived at the Equator, to draw a line on their charts from the point of *actual* crossing to Cape St. Augustine, and then aim to keep this line under the *lee*, so as to have it at least 20 or 30 miles to the *westward* when the ship crosses the parallel of 6° or 7° south. After the ship has passed 7° S. the winds haul more to the eastward, so much so that the Lieutenant considers there will no difficulty in laying up SSW., or even as high as south. If, however, the ship should be headed off to the West of her course, or to the west of the line drawn on the chart from the Equator to St. Augustine, she should take advantage of the first " slant," tack, stand east, and make short and long legs until she can clear the land. " In this part of the route more than all others," says the Lieutenant, " the navigator should study the ' slants,' and take advantage of all of them." Indeed he considers that by studying the charts, as well as the tables, navigators, with attention and management, will have little or no difficulty in making either a SSW. course good on one tack, or an East course on the other between the Equator and 6° S., and should they find it necessary to stand to the eastward he advises them never to stand farther, unless they can make southing also, than to bring 20 or 30 miles to the leeward of them a

straight line drawn from 31° W. on the equator, so as just to clear the land about Cape St. Augustine. The above recommendations are intended for vessels that can sail within six points of the wind. Any vessel that cannot do this will be apt to fall to leeward, and find it difficult and tedious to get up again.

The above remarks are intended to exhibit the great value of such researches as those of Lieutenant Maury. He is working out a great problem; but, while so doing, there are other parts of the ocean that require to be examined in the same way. One—and an important one—we have already alluded to; the routes to India and China, Australia, California, and the Pacific, all need examination. Three modes of sailing claim attention at the hands of the navigator; Lieutenant Maury's wind and current sailing, great circle sailing, and storm sailing. The two former modes are constant—the first depending on the prevalent winds of a district; and the second on the shortest geographical route from port to port. The last is occasional, but not the less important; by means of the tail-winds of a hurricane some remarkably quick passages have been made. To show the importance of a competent acquaintance with storm sailing in the southern parallels, we notice Lieutenant Maury speaks of vessels in making the outward passage to Australia, *viâ* Cape of Good Hope, getting good passages by keeping well south, and running along with the westerly gales generally met in these latitudes; he does not however give the parallel. Piddington points out this parallel distinctly, and shows with great probability that the westerly gales are hurricane winds of the left-hand semicircles of revolving storms. His quotation from Captain Erskine, of the "Havannah," is as follows:—"In corroboration of your opinion that the cyclones in the Southern Indian Ocean, between the Cape and Van Dieman's Land, travel from west to east, I beg to send you a copy of the Havannah's log, and her track between the Cape and Sydney, which I think will show that the winds which we experienced were a *succession of cyclones*, and that by paying attention to the state of the barometer and sympiesometer, and *keeping in the left-hand semicircle*, or that of westerly winds, I was enabled to make the passage from Simon's Bay to Port Jackson in comparatively moderate weather in thirty-four days, including three or four days of light winds." Captain Erskine had been led to adopt this course from the recommendation of Flinders, (vol. 1, chap. 3, p. 45,) not to run down the easting too far to the southward. Flinders says, "having made this passage three times before, I am satisfied of the impropriety of running in a high southern latitude, particularly when the sun is in the other hemisphere, and there is nothing in view but to make a good passage; not only from the winds there being stronger than desired, but because *they will not blow so steadily from the westward*. In the latitude of 42° S. I have experienced *heavy gales from the north*, and from *the south*, and even from the *eastward*, in the months of June and July, &c." In alluding to the importance of keeping on the parallel of 37° in the month of November, he remarks. "From the Cape of Good Hope to the Island of Amsterdam, the winds were never so strong as to reduce the Investigator to close reefed topsails; and, on

the other hand, the calms amounted to no more than seven hours in nineteen days. The average run on the log on direct courses, for we had no foul winds, was 140 miles a day. The Investigator was not a frigate, but a collier-built ship and deeply laden. In the following twelve days run from Amsterdam to the S.W. Cape of New Holland the same luck attended us, and 158 miles a day was the average distance without leeway or calm."

In the Australian Directory, vol. I, p. 1, ships from the Cape of Good Hope, bound to Port Jackson, are recommended to run down their longitude on the parallel of 39°, where the wind blows almost constantly from some *western* quarter, and generally not with so much strength as to prevent sail carried to it. In a high latitude the weather is frequently more boisterous and stormy, and *sudden changes* of wind, with wet squally weather, are almost constantly to be expected.

These authorities, Flinders and the Australian Directory, led Captain Erskine to believe that by keeping too far to the southward, a ship would get into the right-hand semicircle of a revolving storm, or that of the easterly winds; or that the centres of successive gales might be passing near her; whereas, if she happened to *hit off* the proper place in the other semicircle, she might perhaps avail herself of the gale for some days together. He therefore determined not to go to the southward of 39°. "It will be seen by inspecting the log," he says, "that (after two shorter cyclones, one from the 9th to the 11th, and another from the night of the 13th to the 15th of July) the ship ran in one, (which made known its approach by a gradual fall of the barometer) from the 17th to the 21st, the glasses rising and falling occasionally as she outstripped or fell short of the velocity of the storm."

These quotations are calculated to show the great importance of examining the Australian route, especially with regard to the parallels higher and lower than 40° south. We have no doubt the shorter passages would repay the labour.

A careful study of the "Trade wind chart of the Atlantic Ocean" is also greatly calculated to facilitate a voyage. The chart presents at one view the extent of the variations in latitude of the northern calms known as the "horse latitudes," the north-east trade winds, the equatorial doldrums, the south-east trade winds, and the southern calms on their polar side. The arrangement is such that in any particular part of the ocean between 10° and 80° W., and 19° and 39° N. the breadth of the northern calms for any month of the year may be seen on inspection; thus between the meridians of 65° and 70° in the month of July they extend as far north as 39°, the southern limit for the same month between the same meridians being 27° N. In the month of February, between 50° and 55° W., the northern limit is found on the same parallel (27° N.), the southern extending as low as 18° N.—the northern calms are therefore found in all latitudes between 18° and 39° N. during all the months of the year, varying however in breadth according to the season, the parallels above quoted being the extreme limits. In February we find the lowest northern limit between 50° and 55° W.; both east and west of these meridians the northern and

southern limits are found nearer the pole, and may be thus expressed—

	70° to 65°	65° to 60°	60° to 55°	55° to 50°	50° to 45°	45° to 40°
N. lim.	33° N.	31° N.	29° N.	27° N.	33° N.	33° N.
S. lim.	24° N.	20° N.	20° N.	18° N.	21° N.	26° N.

From these limits it is easy to ascertain the breadth of the calms, thus—

	70° to 65°	65° to 60°	60° to 55°	55° to 50°	50° to 45°	45° to 40°
Breadth	9°	11°	9°	9°	12°	7°

In the same way the locality and extent of the N.E. trades are defined. If we suppose a ship to be sailing through the calms between 25° and 30° W. in the month of July, she may encounter them as high as 37° N., and they may stick by her to 25° N. if she be going south. Here she will meet the trades, and find them steady to 15° N.; she may however meet with the trades higher than 25° N. According to the chart they have been fallen in with over the entire breadth of the calms, two ships having reported them as high as 37° N., and twenty in various parallels of the horse latitudes. After passing 15° N., she *may* still get the trades to 8° N., twenty-nine ships having reported them to this parallel; so that between 25° and 30° W. we have instances of the N.E. trades being met with over 29° of latitude. It is however much more likely that between 15° and 8° N. she will have to fight the doldrums, forty-six vessels having encountered them between 15° and 7° N. From 12° to 7° N. she experiences either calms or S.W. breezes, and thence to the equator she is within the influence of a S.W. monsoon, which is regularly found in this part of the world, between June and November.

It has occurred that as high as 5° N. the S.E. trades have been fallen in with during July. From the equator to 20° S., between the meridians already mentioned (25° to 30° W.) they blow a steady pleasant breeze, mostly stronger than the trades north of the equator, and are sometimes met with as high as 31° S.; but like the region north of the equator, common to the trades and horse latitudes from 16° to 31° S., the mariner may expect to be baffled by light airs and calms—this being the region of the calms of Capricorn.

Just as we have endeavoured to give the regions and limits of the three belts of calms and the two belts of trades for the month of July, between 25° and 30° W., the chart contains materials for ascertaining the same regions and limits for every 5° of longitude and every month in the year.

The "Storm and rain chart" exhibits at one view the results of the experience of numerous vessels in all parts of the northern Atlantic, relative to gales of wind, rain, thunder and lightning, fogs, &c. A commander possessing one, can ascertain at a glance whether the square of ocean he is sailing through be visited with gales, or whether it is comparatively tranquil. It is true that some squares exhibit a much greater proportion of gales than many others; and while there is every reason to believe that some parts of the ocean are constantly exposed to violent winds, rotatory storms, &c., and that others are rarely disturbed—yet the *course* of the squares exhibiting a preponderance of storms is clearly seen on the chart to coincide with the routes

between Europe and America. Nor is this at all a drawback—it is on the contrary a great advantage, and as the system proceeds, it is evident the routes will become more and more restricted to certain squares, so that we shall become more and more acquainted with the exceptions to the usual maritime weather appertaining to each route. Commanders will do well to carry this and the pilot charts with them on their passages to America, the West Indies, or the Line. We have before hinted they are all capable of improvement, and, in conclusion, we would reiterate the advice already given—do all you can to augment our stock of information, especially as we learn from good authority that steps are not likely to be taken in this country for advancing this important object. Our own Admiralty charts appear to be considered in some quarters as amply sufficient for all that may be required at sea; and although we are bound to acknowledge that they are executed in a very superior style, and, so far as accuracy is concerned, there is nothing to complain of, being the result of the most recent surveys, conducted under the superintendence of able officers; nevertheless we see no reason why every auxiliary that can be derived from a continually-advancing science might not be judiciously superadded. When shall the time arrive that we shall be able to say—"Improvement, thou art not wanted here, our knowledge is perfect. Satisfied with what we know of the winds and currents of the ocean, we need not take the trouble to collect, arrange, and examine observations, and deduce from them 'sailing directions.'" Mariners, that time is far distant in the future. T.

[The present article is intended as a sequel to that on "Meteorological Observations at Sea." The object of the Congress that met at Brussels was to obtain an uniform system of observations; this, to a great extent, the Americans had already accomplished. Our object is, not only to show what the Americans have done, but to induce, if possible, such a spirit of inquiry among Commanders in the Merchant Service, that the idea, originally suggested in this country, may be efficiently carried out. As a means of contributing to this end, copies of all logs entrusted to the *Editor of the Mercantile Marine Magazine* will undergo examination and be carefully analyzed, and, as opportunity may serve, the results will be published in connexion with the Magazine—the contributions of each Commander receiving due acknowledgment.]

REMARKS ON THE TYPHOON IN THE CHINA SEAS, IN MAY, 1853.

[THE following remarks are intended to form part of a series of determinations of the principal Elements of Storms, *as deduced from information furnished by Commanders in the Mercantile Marine.* As it is apprehended these determinations will be found useful to seamen, they will be inserted as space and other circumstances may allow. We accordingly invite contributors to favor us with information similar to that inserted in No. 1, page 31.]

The Typhoon of the China Seas being the most *destructive* of Rotatory Storms, and oftentimes apparently very much confined as to its extent, so as rapidly to overwhelm a ship in its disastrous gyrations, every notice of the occurrence of something more than an ordinary gale of wind must not only be valuable, as advancing our knowledge of the general Meteorological characteristics of the China Seas, but also of great utility to the Navigator, in extending his acquaintance with the seasons and localities of these terrific visitants of the portion of the Ocean above-named.

In the previous number, page 31, will be found an interesting record of a small, but very violent Typhoon, that occurred at an unusual season, in the southern part of the China Sea. This record is admirably adapted to exhibit how much may be done by simply noting, in a well-kept log, all the material and important phenomena, which may afterwards be examined at leisure, and turned to profitable account.

The record referred to contains sufficient information to determine the following points:—First, the season. Second, the locality. Third, the approximate size. Fourth, the path of the Typhoon. And, Fifth, its velocity.

1. SEASON.—Mr. Piddington remarks, in the second edition of his Horn Book, that Captain Kirsopp experienced, in 1850, a severe cyclone in the Bay of Manilla, as early as May 4th. The *defective* records that came to his hands prevented him from determining any thing very positive as to the particular Typhoon; he, however, perceived that its path was northward. The author of the "Hand Book of the Law of Storms" (page 74) inserts a Table for the Southern Division of the China Sea, latitude 9° to 16° north, in which we find Typhoons occurring in *September*, *October*, and *November*. Again, in a note on page 72, he says:—"There is some reason to believe that cyclones occur in the China Seas in the month of May; but the information at present obtained is not sufficient to include it in the Hurricane Season." The information concerning the cyclone, in which the "Celestial" was exposed to so great danger as recorded in our former Number, is sufficiently definite to enable us to include the month of May in the Hurricane Season of the China Sea, and to amend the Table in the Hand Book as follows:—

Table of Storm Paths in the Southern Part of the China Sea.

CHINA SEA—SOUTH,

From 9° to 16° North Latitude.

Reference.	Direction.	Month.	Remarks.
Piddington, 2nd Edit., p. 359	Northward.	May.	Information scanty.
Mer. Mar. Mag., No. 1, p. 31.	NW. by N.	"	Small—very violent.
XVII.	NW.	October.	
XXVIII.	WNW.	November.	
XII.	WNW.	September.	
XVI.	WNW.	October.	
IX.	W.	November.	
g.	W. by S.	"	
q.	WSW.	"	Manilla.
o.	S.W.	October.	"
p.	S. by W.	"	"
y.	S.	November.	"
XXV.	WNW., WSW.	"	Recurved.

The Roman Numerals and Italic Letters refer to Mr. Piddington's Map of the China Sea.

The author to whom we are indebted for the above table states, that the Typhoon region partakes somewhat of the nature of the hurricane region in the Bay of Bengal; the additions just made to his table confirm this idea, and lead us to hope that the time is not distant when we shall be able to give the distribution of Typhoons in reference to the Monsoons, especially for the southern part of the China Sea.

2. Locality.—The centre of the Typoon experienced by the "Celestial" appears to have travelled from a point in 12° 15′ north, 111° 31′ east, to another situated in 13° 3′ north, 111° 4′ east, while under observation; its locality is, consequently, about 2° east of the coast of Cochin China, in a part not very much frequented by cyclones.

3. Size.—It would seem, from the record in question, that the ship first fell in with the *effective* portion of the cyclone shortly after midnight, between the 19th and 20th of May. It is, however, probable she began to feel it twenty-four hours earlier. On the 18th, before noon, as appears from her log with which we have been favoured, she was sailing with a "fine clear monsoon, beautiful weather." In the afternoon the monsoon failed, giving place to light baffling, dirty weather, &c.; and, in half-an-hour, between 1 and 1.30 a.m. of the 19th, *the wind changed from* WSW. *to* NNE., a significant indication that the previous light baffling winds had been, most probably, playing around the circumference of a cyclone. The first effect recorded is this: "in all studding sails, dirty appearances." At this

time, the bearing of the centre must have been ESE. of the ship. By noon, the wind had increased to squalls, the royals and all stay-sails were taken in, and the centre of the Typhoon had approached the parallel of the ship, the wind veering to N. by W. and N. during the course of the afternoon. It was now that the *effective* portion of the gale was first descried. At 4 p.m. a very bad appearance attracted attention in the NE., a heavy swell making from that quarter; at 9 p.m. the top-gallant sails were taken in.

The whole of the phenomena and proceedings of the 18th and 19th are perfectly in accordance with the idea of the ship being involved in the outer gyrations (the *non-effective* portion) of a Typhoon —a clear appreciation of which would have enabled the Commander to have escaped the fury of the centre. The sudden change of wind from WSW. to NNE., with the necessity of shortening sail—which, as the day advanced, became more and more apparent, until the ship was reduced to her topsails—clearly shows that a gale was steadily advancing from the SE.; and that, the course of the ship being NNE. or thereabouts, she was shooting athwart the axis line. At length the time of trial arrives; shortly before midnight the breeze increases, and the Commander is *compelled* to wear and take in the first reef of his topsails; and when, about an hour later, he double reefed his topsails, as we learn from the log, so rapidly was the centre approaching him that he had no time to clew them up or stow them; everything demands attention at the same moment, and when he found himself in the calm centre, he had plenty to do in cutting away the wreck of his topmasts, yards, and rigging.

From a careful consideration of the increasing force of the wind, the gradual shortening of sail, and the plunging into the *effective* vortex, combined with the ship's course, it would appear that the diameter of this Typhoon could not have been less than 200 geographical miles.

The record of this gale acquaints us that, from the time the Captain double-reefed his topsails until it fell nearly calm, about five hours elapsed; that the calm lasted about an hour and a quarter; and that another five hours were passed in the ship getting through the remaining half of the *effective* vortex. Now, assuming the ship to have made about half a degree, or rather less, of her course good during her passage through the gale, say about thirty miles, the effective portion of the Typhoon, to satisfy the phenomena, would have been about 40 miles in diameter, and the calm about five miles.

From these data we obtain the *distribution* of the Typhoon winds, as to strength, over the area of 200 miles. An annulus or *ring*, 80 miles wide, surrounded the *vortex*. In this ring the force of the wind varied from light baffling airs to a stormy breeze, or half Admiral Beaufort's scale (see page 14); and it would not be difficult to mark on a diagram the successive strata in which the wind increased, from the outer to the inner edge of this annulus. An interior ring, 17½ miles wide, constituted the vortex, in which the wind raged so violently that, over this small area, the other half of the Admiral's scale was experienced. The centre of the Typhoon, a calm of about

five miles in diameter, filled the space within the interior ring, completing the phases of the gale.

4. PATH.—The changes of the wind and passage through the centre, combined with the ship's course, give a path for this Typhoon of NW. by N., or perhaps, more accurately, of W. 32° ½ N.

5. VELOCITY.—The same data, and more especially the passage of the ship through the effective vortex, give for the velocity about five miles per hour.

REMARKS.—Upon a careful perusal of the ship's log, combined with the conclusions derived therefrom, the following question suggests itself. Could the Commander have taken any steps to have extricated himself? Assuredly not when he found the wind so rapidly increasing as to blow away his sails and prevent his stowing them: when, for the first time, it became evident that a Typhoon had advanced considerably on him, it was then too late. We are particularly struck with the *low* force of the wind at which this crisis was attained. Mr. Piddington speaks of "every cyclone as a great whirlwind, *of which the outer part, as to strength, is a common close-reefed topsail gale, such as no seaman cares for and no seaworthy ship is hurt by*, but of which the violence increases with great rapidity, as the centre is approached, till, close to or at it, it becomes of destructive fury." Upon comparing this statement with the Typhoon before us, we find *the outer part, as to strength, to be a fresh breeze, the ship just carrying her royals*—light baffling airs playing beyond; and, even if we take the outer circle of the effective portion, we find it marked only by a strong single-reefed topsail breeze. It is, therefore, important for the seaman to look out early for indications of the presence of a cyclone, and to be particularly on the alert when he meets with winds differing from those usual, either to the locality or season.

The author of the "Hand Book of the Law of Storms" recommends that a ship should be hove-to, in order to ascertain her position in a storm, when reduced to *double-reefed topsails*. In the case before us this would, evidently, have been too late. The violence increased with immense rapidity, from the time she took in a reef. At what time, then, ought the Commander to have manœuvred to have avoided the vortex? Clearly, in the case before us, when he took in his royals, and found a threatening appearance in the NE.

The vessel involved in this Typhoon sailed into the advancing quadrant of the left-hand semicircle. How could this have been known? By the wind veering from NNE. to N., and N. by W., *against the sun*, while the storm and ship came on the same parallel. In the "Hand Book of the Law of Storms," page 109, we find that vessels sailing into the left-hand semicircle of a storm in the China Sea avoids all danger, by simply waiting or lying-to. The case before us is an admirable instance of this; the effective portion scarcely exceeding 40 miles in diameter, had she hove-to when her royals were taken in, or, still better, had she stood to the SE. when, at 4 p.m., she saw the threatening appearance in the NE., as the "Vernon" did some years since, and sailed round the heel of the Typhoon, a manœuvre also recommended in the "Hand Book," all would have

been well. It is certainly difficult to know so well beforehand what to do, but the experience of the past will arm us for the future. Vessels have already been in similar situations; and, by the manœuvres recommended, have escaped. On jotting down the path of the present storm, it appears pretty clear that a course of about thirty miles to the SE. would have allowed the centre to have passed about twenty miles NE. of the ship, and she might have sailed round the heel of the storm, carrying her top-gallant sails. The time of manœuvring, in this instance, was clearly limited to about nine hours, the most advantageous period being 4 p.m., when the weather looked very bad to the NE.

Upon the whole, the case is a very instructive one, and greatly calculated to increase our knowledge, both theoretically and practically. The hurricane season is enlarged, the nature of the winds surrounding the vortex clearly shown, and the time for manœuvring indicated. The importance of most particularly noticing meteorological appearances cannot be too greatly insisted on. H.M.S. Vernon, in the same part of the world, noticed a similar threatening appearance to the NE.; her course was also similar, but she altered it, stood to the SE., and had the satisfaction to see the meteor gradually leave her towards the north, while the wind hauling, convinced her that she might with safety resume her course. We cannot but regret the damage suffered by the "Celestial;" at the same time we have done all in our power to extract from this instance as much information as possible, and to show that, whether the Commander succeed in manœuvring with the gale or suffer by its violence, the Service, in each case, derives the benefit provided the details are made public.

O.

REMARKS AND DIRECTIONS FOR THE ISLAND OF BARBADOES.

BY CAPT. E. G. DENT.

THE Island of Barbadoes is about seventeen miles long and about twelve miles broad, containing 106,470 acres of cultivated land, and having a population of 102,000, of which 79,000 are negroes. The principal objects of exportation are coffee, sugar, rum, and cotton. It is the easternmost of the Carribbee Islands, is moderately high, of level appearance, and with very few trees upon its surface; nevertheless, in clear weather, you may see it full twelve leagues off.

As you approach the island from the eastward, and about three degrees off, the water appears to be discoloured and thick, but without soundings; by paying attention to this, you may discover your situa-

tion. The northern and eastern shores of Barbadoes are rocky and should be approached with caution, for there is no place of shelter whatever. Vessels from the eastward, in approaching this island, should always get into the latitude of 12° 56′ North, and make for the southern side of the island, on which is a lighthouse, lately erected, painted with alternate red and white bands. It shows a revolving light, visible in clear weather eighteen miles.

After passing the south point, you may haul up to the NW., keeping about three miles off the land, for Needham's Point, giving it a berth of about a mile to avoid the reef which runs off the point, and run into Carlisle Bay.

The best anchorage for Merchant Vessels is St. James' Church N. by E., and the Dockyard Jetty, SE.—in eight fathoms. By taking this position, you avoid the disagreeable ground swell that sets into the Bay, when the wind is to the southward of east. At the north part of Carlisle Bay stands Bridgetown, the principal town of Barbadoes; it is situated at the entrance of a small rivulet.

NNW. from the northern part of Carlisle Bay are the Pelican and Half-acre Shoals; passing by the leeward side of the island, and bound to the northward, you must give them a berth, as the outer one lies a mile off shore. The mark for clearing them is the Tower of St. Ann's Castle, on with the centre of the Dockyard Storehouses bearing S. 52° E. This leads clear in six fathoms.

About five miles from the northern part of Carlisle Bay is Hole Town, and about four miles beyond that is Speight's Town, where vessels occasionally proceed to finish loading.

The port charges at Bridgetown are 2s. 9d. per register ton; Secretary's fee, 4 dollars; Mole Head Pass, 3 dollars.

In discharging an outward cargo, which is done in lighters (vessels' boats assisting), no spirits or goods subject to duty can be landed after 2 p.m.; nor other goods after 4 p.m. A person from the ship must accompany each lighter, to protect the goods and obtain a receipt for them on delivery. There is a great deal of unnecessary delay, particularly with coals, as they are weighed upon the quay, after being landed; and, as they are generally sold there in small quantities (the buyers giving a receipt for the same to the person in charge from the ship) the consequence is, that, if any remain on the wharf at sundown, you must employ a man to watch them all night, or run the risk of a heavy loss by their being stolen, which is sure to be the case if left unguarded. Neither consignee nor buyers will give a receipt, until they are weighed upon the wharf.

Vessels arriving in ballast may throw it overboard in the outer part of the Bay. Stone ballast may be sold here at 1s. per ton, and taken from alongside, free of expense to the ship; it always commands a sale.

If ballast is required by vessels, stone ballast will be put alongside at 1 dollar, and sand or rubbish at 80 cents, per ton.

Sugar is brought from the plantations into Bridgetown in cars drawn by bullocks, and then rolled on the wharf for shipment, where it is lowered into lighters or ship's boats by a small crane. Every

shipper of produce has a crane, for the use of which each ship is charged.

Lighterage for Sugar is at 1s. per hogshead, three tierces being calculated equal to two, and eight barrels equal to, one hogshead. The weight of the hogshead averages between 18 and 26 cwt. (gross); tierces from 10 to 16 cwt.; and barrels from 250 to 300 lbs. Some of the large hogsheads are 47 inches in diameter at the bilge.

Stevidores are employed to stow the sugar; their established charge is 1s. per hogshead, and smaller casks in the same proportion as before mentioned for lighterage; and they find and pay their own men—sometimes having four gangs of them (six in a gang) in the hold, if the sugar is coming alongside quick. The ship's crew have quite sufficient employment in heaving the casks on board from the lighters, and lowering the same into the hold; the ship's long boat being employed, with three of the crew, bringing off sugar at the same time.

Some Captains have their cargoes stowed by the day; but, unless the sugar comes slowly off, such as twenty casks a day, it is a more expensive plan than by the cask. In stowing by the day, wages are a dollar per man, and the stevidore a dollar and a half.

The rule for dunnage is five inches on the floors, and nine at the bilge, for sugar. Molasses is generally considered to be 5 per cent. better, as a cargo, than sugar; with the former, a vessel will load deep, which is not the case with the latter, unless the vessel is built for the trade and has a great number of barrels—which are not generally to be obtained. Molasses is shipped in puncheons of about 110 gals., and the average weight of the same is 12 cwt. Seasoned casks are sent on board, and then coopered (half of which is charged to the ship) before they are placed in the hold, where they are stowed empty; the casks are then bedded, quoined, and blown before being filled—the filling is done by means of a hose filled by starting casks at the hatchways.

Dunnage, wood, and spars are scarce and dear; vessels proceeding to Barbadoes should be well provided with the former. A vessel loading molasses, and not having dunnage, staves must be purchased for the same, which are sold at 40 dollars per thousand (1,200 being given as a thousand). Three thousand would be required to dunnage a cargo.

Molasses casks, after being stowed and filled, are left with the bungs out, otherwise the fermentation would burst the casks.

Vessels generally take their cargoes in with a single derrick; but the regular traders and vessels whose midship bulwarks do not unship, have a perpendicular derrick from the water-ways up and lashed to the main-yard, for hoisting-in with; and another derrick in midships, for swinging and lowering down the main hatchway.

Vessels proceeding to load at Barbadoes should be provided with two pairs of double screws, four crowbars, two purchase-blocks, falls, &c., two derricks, and a winch.

The boats should also be provided with masts and sails (the long boat in particular) for droging the sugar.

Fresh meat *(pork)* for the crew is obtainable twice a week, which, together with the heat of the climate, is apt to cause dysentery among the seamen; and as there is but one military hospital in the island (into which seamen are not admitted unless under very serious circumstances, and not even then without great trouble and difficulty), masters of vessels should endeavour to get beef for the crew, which is to be had occasionally at a greater expense.

The health of a crew is of great importance; for, if sickness prevail, the sick are placed in a boarding-house on shore, which, together with the medical attendance, &c., has to be paid by the Ship. The latter is charged 5 dollars per visit. When a vessel is ready for sea, the sick are put on board and must return with that vessel, whether they are able to work or not; in the latter case, extra hands are shipped.

For the use of a pair of screws one dollar is charged, and for the use of a pair of can-hooks two dollars for the whole time of loading.

The principal shippers of produce are Messrs. Cavan, Messrs. Daniels (T. Louis, agent), Messrs. Hardy, and Messrs. Gibbs and Bright (P. Kilkelly, agent). The three first appear to ship the most; they certainly give the greatest dispatch to their vessels.

Vessels chartered by the round, or having a slight advance on the homeward freight, in consideration of taking an outward cargo free, are liable to detention from the following causes:—All the goods sent out are the property of planters who are, of course, expected to find sufficient produce to fill up the vessel for the homeward passage; and, if they have not a sufficiency ready, the vessel must wait till they have, as other shippers will not pay the increased rate of freight.

PRIMAGE.

SUGAR—Quarter-casks and Barrels		4d.
	Hogsheads	6d.
COFFEE—Quarter-casks		4d.
	Barrels	2d.

LOGWOOD—6d. per Ton. RUM—6d. per Puncheon.
MOLASSES—6d. per Puncheon.

LANDING TARE.

Under 8 cwt. .... 14 lbs. per cwt.

	Cwt.	qrs.	lb.
8 cwt. and under 12 cwt.	1	0	0
12 cwt. „ 15 cwt.	1	1	12
15 cwt. „ 17 cwt.	1	2	0
17 cwt. and upwards	1	3	0

THE MARINER'S COMPASS,

WITH ESPECIAL REFERENCE TO ITS "DEVIATION."

It will be generally allowed that the attention of Commanders and Officers in the Merchant Service should be directed to all improvements that may, at any time, be suggested or adopted in relation to the Mariner's Compass; and that the nature or advantages (if any) of such improvements should be made known, as far as possible, from practical experience; but never more than at the present moment—while iron-ships and steamers, of every class, are multiplying on us so rapidly—while a larger quantity of iron is called into requisition than was formerly employed in the construction of ships built of wood—and while vessels are so constantly chartered for the conveyance of iron from port to port, both at home and abroad—did it become an imperative duty that every information on the "Deviation of the Compass" should be extensively diffused among those who are entrusted with the charge of a ship; for, arising from the circumstances just mentioned, the mariner of to-day has learnt that he cannot, at all times, steer his course with the certainty he had once anticipated; nor can he bestow on the Compass that implicit reliance which was the prerogative of his predecessors in the art of Navigation. On this knowledge may depend not only the successful termination of the voyage, but the preservation of the lives on board.

It will not be wholly beyond our purpose, therefore, if on the present occasion, and as introductory to the chief object in view, a brief sketch is given of the theory, as well as the facts and principles of Magnetism, in its relation to the Mariner's Compass.

Early History.—No one can doubt that the greatest benefits mankind has derived from Magnetism are those which have resulted in its successful application to the purposes of Navigation.

The commercial cities and states of antiquity, which were enabled by a favourable geographical position to avail themselves of the advantages of oceanic intercommunication, were necessarily restricted to a system of coasting voyages, since they were unacquainted with the directive property of the magnetised needle. Familiarity with the phenomena of the ocean and the atmosphere might (as indeed it did) eventually encourage the seaman to trust himself to the dangers of the "trackless deep" under the guidance of periodical monsoons, as, by means of these winds, the Phœnicians early navigated the Indian Ocean, between the Straits of Bab-el-Mandeb and the west coast of India; or again, the daring spirit of adventure might have achieved, at widely-separated intervals, arduous conquests over nature, as in the case of the colonization of Iceland and Greenland by the Northmen of the ninth and tenth centuries, whose first acquaintance with those shores originated in their being driven thither by the storms of the

Atlantic; but, without the aid of the Mariner's Compass, Navigation had always remained imperfect, and indeed to this day would have been only in its infancy.

There is abundant evidence to show that the attractive power of the loadstone, or natural magnet, was known at a very remote period. From the time of Homer downwards, several Greek and Roman authors refer to this property; and if the story, as related by Pliny; may be accepted as credible, it would appear that Dinocares proposed to Ptolemy Philadelphus to build a temple in which, by means of loadstones, an iron statue of Arsinöe should be snspended in the air. A shapeless mass of metal, acting with great force and subtlety on other masses of iron, would naturally incite the active minds of the ancient philosophers to speculate on the nature of phenomena apparently so mysterious; and, considering how frequently the refined methods of modern science have been baffled in magnetic investigations, it almost follows as a consequence that, unable to solve the difficulty, they would attribute the influence to supernatural agency. At what precise date, or under what circumstances the directive power, or polarity of the magnet first became known may, probably, always remain a secret; but it does appear strange that, at the time when "the Tyrian flag floated simultaneously in the British and Indian Seas," the value of the magnetic needle, as a guide to the navigator, had not penetrated beyond the limits of the Chinese Empire, where, from the earliest times, "magnetic cars" had been used to cross the plains of Tartary. Du Halde, in his "General History of China," narrates a circumstance which occurred 1040 before the Christian Era, on which occasion certain ambassadors were presented by Tcheou-Kong with "an instrument which, on one side, pointed to the north, and on the opposite side to the south, to direct them better on their way home than they had been directed in coming to China." This instrument was called Tchi-nan, which is the same name as that still given by the Chinese to the sea-compass; and, to judge from the rudimentary character of that in use on board their vessels at the present time, it may be questioned whether any improvement has been made since its first adaptation by them to the purposes of Navigation.

The earliest mention of the use of the Compass in Europe is found in some poetry written in 1190; and the knowledge of the magnetic needle may, perhaps, have been acquired by European nations during the Crusades. The instrument with which the mariner navigated the Syrian Seas, in 1242, was merely a common sewing-needle, driven through a reed or cork in such a manner as to form a cross; this, being allowed to float on the water contained in a basin, guided him "when the night was so dark as to conceal from view the stars which might direct his course, according to the position of the cardinal points." It is probable that Flavio Gioja, of Amalfi, to whom the honour of the discovery in 1302 was long attributed, may have been chiefly instrumental in improving the Compass; but notwithstanding the immeasurable value of such an instrument, which, imperfect as it was, entirely changed the system of Navigation, progress was slow; for it must be acknowledged that its construction, up to a compara-

tively recent period, did not receive the attention commensurate with its utility.

MAGNETISM "is one of those unseen, imponderable existences, which, like electricity and heat, are known only by their effects." A bar of *tempered steel* may be rendered permanently magnetic; it is then termed an *artificial* magnet, in contradistinction to the loadstone or *natural* magnet.*

A Magnet is found to exhibit four properties:—

1. POLARITY—whereby when allowed to move freely in a horizontal plane, uninfluenced by any ferruginous body, one end of the magnet is directed towards the *north* and the other towards the *south*, which are the N. and S. *poles* respectively; and the direction in which the magnet remains at rest is a *magnetic meridian*.

2. THE ATTRACTION OF UNMAGNETISED IRON.

3. THE ATTRACTION AND REPULSION OF ANOTHER MAGNET, as seen when *dissimilar* poles *attract*, and *similar* poles *repel* each other.

4. MAGNETIC INDUCTION—whereby either soft or cast iron, when placed within the influence of a magnet, is rendered *temporarily* magnetic; and thus magnets may be separated into two classes—*permanent* and *inductive*.

TERRESTRIAL MAGNETISM is one of the most complex problems of the present day; in no department of natural knowledge is there a wider field for research, and in no science is there such fame and honours to be won as by the satisfactory solution of the many abstruse and difficult questions which occur in magnetic investigations, since in them are involved many others of immense importance. The magnetic needle appears to be influenced by, and under the control of, the earth; for varying with the geographical position, the phenomena are analagous to those which may be seen when a small needle is carried over and around a large magnetic bar; and, reasoning from these data, it is difficult to avoid the conclusion that our planet is an immense magnetic mass.

Terrestrial Magnetism is especially manifested through the medium of three classes of phenomena:—

1. The *declination* of the needle from the geographical meridian.
2. The *inclination* of the needle.
3. The *intensity of force* at any given place.

The value of these elements is by no means constant and uniform; on the contrary, "the mysterious course of the magnetic needle is equally affected by time and space," by the positions of the sun and moon, and by changes of place on the earth's surface. The disturbances or variations of the system may be, conse-

* The *Loadstone* or *Natural Magnet* is a peroxide and protoxide of iron, the color varying from reddish black to dark grey; the distribution is extensive; it is met with most abundantly in Norway, Sweden, Russia, Isle of Elba, Arabia, India, and China; occasionally it is found in England. *Magnetic Iron Sand* is common in Fifeshire and the Isle of Skye.

The *Artificial Magnet* is made by drawing a powerful magnet over the surface of a steel bar, or by a galvanic process.

quently, classed as secular, periodic, and irregular. Secular changes are those which, when they have progressed through a certain course, over a long period of time, eventually return to their original value; periodic changes are such as occur during a day, month, or year; and irregular changes are those which, to all appearance, are perpetually varying. The combination of these phenomena admit of being represented on the globe, for any given period, by three systems of lines, viz., the *isogonic*, or lines of equal declination; the *isoclinic*, or lines of equal inclination; and the *isodynamic*, or lines of equal force.

(To be continued.)

GREAT CIRCLE SAILING.

(THE SUBSTANCE OF TWO PAPERS RECENTLY READ IN LIVERPOOL,

BY JOHN T. TOWSON, ESQ.,

Examiner in Navigation, Liverpool Marine Board.)

Great Circle Sailing is the art of navigating a ship by the shortest possible route. A straight line is absolutely the shortest track between any two points; but a straight line cannot be projected on the surface of a globe. It must either touch it at one point, passing off from the surface as a tangent, or, if two points on such a surface be united by a straight line, it must be effected by tunnelling below the surface, the straight line, in this last case, becoming the chord of the arc between the two points. Since, then, we cannot sail over the surface of the ocean in a straight line, let us inquire what route is practicable which differs less than any other from a straight line. This we shall find to be what we denominate the arc of a great circle. If we slightly bend a straight rod into a circular form, we shall find it to be the arc of a large circle. If we bend it more into the form of an arc, we find that it becomes the part of a smaller circle, and the more we bend it into a circular form, the smaller will be the radius of the circle with which it will correspond. Thus we find that the larger circle deviates less from a straight line than the arc of any of smaller radius; so that, if the mariner sails over the ocean by the route of an arc of the largest circle that can be drawn on the surface of the globe, he may be said to sail directly to his port. We may draw an unlimited number of circles on the surface of a globe, each varying in its diameter; but we cannot draw a circle on such a surface the radius of which is greater than that of the globe; the arc of a circle, the radius of which is equal to that of the globe, is what we call the arc of a great circle. The arc of any larger circle than that of a great circle will, as is the case with a straight line, be a tangent to the globe, touching at one point only. A great circle may also be distinguished

from any other circle drawn on the surface of a globe by its dividing the surface into two equal parts; thus, the equator is a great circle, dividing the surface of the earth into two equal areas, called the northern and southern hemispheres. But the tropics are not great circles, and we consequently find that each divides the earth into unequal parts, Thus, on the north of the Tropic of Cancer we have $66\frac{1}{2}^\circ$ of latitude, whilst on the south $113\frac{1}{2}^\circ$. On the north of the Tropic of Cancer we have a temperate and a frigid zone; on the south we have three zones—a temperate, a frigid, and a torrid zone. There is also a practical method of determining whether any arc on the surface of a globe be the arc of a great circle. If we hold a piece of string tightly by its ends, and press it down on the surface of the globe, it will describe the arc of a great circle; and this method of projecting the arc of a great circle, at once, is also a proof that a great circle is the shortest possible track over the surface of a globe. The carpenter draws his straight line on a plane by a chalk-line. The principle is this—he employs a tension which draws the line as short as the points to which the ends are fastened will allow. Now, since a straight line is the shortest track on a plane, he produces a straight line by this means; but, when we stretch the line over the surface of a sphere, the rotundity of the surface bends the line from a straight into a circular form; but, since it deviates as little as possible from the straight line, it forms the arc of a great circle, such being the shortest track across the surface of a globe. There are, however, other circles connected with the science of navigation, besides great circles. The parallels of latitude are circles lessening in their diameters as we approach either pole. The parallel of 48° of latitude is but two-thirds the diameter of a great circle, and the parallel of 60° is only one-half the size; and it is on these parallels that the mariner steers his ship, when his port is east or west of his ship, if he adopts any other system of navigation than that of great circle sailing. If he sails north or south, he sails on the arc of a great circle, whatever system he employs, because the meridians, or north and south lines, are great circles dividing the earth's surface into equal parts. Also the mariner who sails east or west on the equator, sails on the arc of a great circle, the equator being a great circle; but, in all other cases the mariner who sails by Mercator's chart takes his ship by a circuitous route. If he does not sail in the direction of one of the cardinal points, he sails on what is technically called a rhumb line; which, on the chart, is represented as a straight line, but on the globe is a spiral making endless revolutions round the poles. Thus Mercator's sailing conducts the ship by a circuitous route, as compared with great circle sailing. It was adopted on account of its simplicity, and not on the supposition that it conducted the vessel by as short a route as great circle sailing did. By Mercator's sailing a ship may be navigated by one course throughout the voyage. For instance, if the ship and her port be both in the latitude of 50° north, and the port west of the ship, she could then reach her port by sailing a due west course throughout the voyage. But not so by great circle sailing; she would then have, if in north latitude, first to steer north of the

west, and constantly vary her course to the left, till at length she would reach her port by a south-westerly course. This fact requires explanation; the ordinary mariner cannot be made to comprehend how it is possible that, by varying his course continually, he will reach his port by a shorter track than by sailing one course all the voyage. It is generally supposed, if the place A be west of B, that B must be east of A. This would be the case if this earth were a plane, but it cannot be so on the surface of the globe. East and west are local or relative terms; they have no existence in space, but refer only to the locality in which we are situated. If I say that A is west of me, I imply that the position of A is at right angle to the meridian, or north and south line of the place in which I am situate, Now if all the meridians were parallel to each other, then a line at right angle to one would be at right angle to each. And the meridians of all places are represented by parallel lines on the chart; and so it is that, by referring to the chart, it appears that if A be to the west of B, then B must be the east of A. But on the globe, the meridians, or north and south lines, meet at both poles, in angles varying according to their distance in longitude; consequently, a direct line which cuts one meridian at any angle cannot cut any other meridian at the same angle. Now, supposing that either of the audience were within sight of myself in the vicinity of the North Pole, the pole between us, but in sight of each other, we should then be both north of each other. So it would be if the principles of great circle sailing be admitted; but, according to Mercator's principles, we should be east and west of each other, instead of being each north of each other. Then, we find that the great circle course is the direction we see any object—the course the crow flies; it is the real direction of the object, if in sight; it is the direction in which is situate the base of a mountain, when we discern its summit in that position. It is also the position of any place at which a heavenly body is vertical, at the time in which that heavenly body is seen from any other place. For instance, the island of St. Salvador, or Cat Island, has, at a certain hour of the sidereal day, a star, called Alpha Arietis, nearly vertical, or overhead. Liverpool has also another star, called Canopus, nearly vertical, or overhead, at a certain time of each sidereal day. Now the position in which we, at these times, see these stars is the real position of the place over which it is vertical at the time. If, then, we sail from Liverpool for St. Salvador, we should see that star bearing west; as we proceeded on our voyage, its position with regard to the ship's place would veer round to the south, till at length we reached our port at last by a SW. course. During the whole of this voyage, we should see the vertical star of St. Salvador right before us; and the vertical star of Liverpool right astern; and in returning, by great circle sailing, we should observe the vertical star of Liverpool right a-head, and the vertical star of St. Salvador right astern; so that it is evident that though we were obliged, in adopting great circle sailing, to alter continually our course by compass, still we sailed directly from one port to the other. Not so, however, if we adopted Mercator's sailing. We should then start from Liverpool, with the position of the vertical

star of St. Salvador to the right 45°. The difference between the position of our port and our course would daily decrease, until we arrived at our port. Thus, again, we find that, by Mercator's sailing, we sail one course by compass throughout the voyage; but, by great circle sailing, we constantly vary our course; still it is by great circle sailing we steer directly to our destination, but by Mercator's sailing we arrive at our destination by a circuitous route.

It was not from the want of a conviction of the advantages connected with great circle sailing that, till of late, it had been so rarely used by practical men, but from the tedious length and embarrassing nature of the calculations requisite to determine the series of ever-changing courses which a vessel must pursue in order to follow the track of a great circle.

In order to obviate this evil, I invented and computed a set of tables, in 1847, which the British Admiralty did me the honor to publish, by means of which the finding of these courses in succession is reduced to an affair of inspection. By this means I have had the honor of introducing great circle sailing into general use; from which circumstance it has been assumed by some, erroneously, that I have laid claim to the invention of great circle sailing, and this supposed assumption of mine has been confirmed by the fact of my laying claim to the honor of being the originator of composite sailing, which is often denominated great circle sailing, and to which we shall hereafter refer. In order to clear myself from the charge of assuming the honor of being the inventor of great circle sailing, with which I have been frequently taunted, I will read from one of the most extensively-circulated works ("Weale's Rudimentary Treatise") a quotation from a lecture delivered by myself to the Society of Arts:—

"From a communication by Mr. Towson to the Society of Arts, in May, 1850, it appears that, in 1495, Sebastian Cabot projected a voyage across the Atlantic on this principle, with a view to the discovery of a north-west passage to India. In 1537, in the first treatise on Navigation, the system was treated of by Numez. In 1561, Cortez, and after him Coignet and Zamaramo advocate the adoption of great circle sailing."

From these observations it will be evident that I am not chargeable with the desire to claim the unmerited honor of being the inventor of great circle sailing.

Before we advance further in the investigation of the subject, it will be necessary to make a few remarks on the nature of Mercator's sailing. In order that the sphere should be drawn on a plane, it is necessary to distort the surface. Those regions towards the pole have to be distended for this purpose. In thus distorting the earth's surface, the shortest route is made to appear as circuitous; and the circuitous route, by a parallel of latitude, is represented by a straight line. If two places do not differ in longitude more than 30 or 40 degrees, the error of Mercator's chart is not very perceptible. In crossing the Atlantic, it differs from the great circle route not more than 100 miles in practice; consequently, whilst navigation did not

extend much beyond the Atlantic, and was confined principally to regions in which the track is required to be modified, on account of winds, the disadvantage of using Mercator's sailing was not practically experienced. But the length of our voyages have since been greatly extended; more than two hundred vessels from this port alone have, in the last year, started out on a voyage to circumnavigate the earth. The Pacific is more often crossed than the Atlantic was in the time of Mercator and Wright, so that ten times the amount of saving can be now effected in the length of the voyage. From Liverpool to New York, scarcely a hundred miles can be saved; whilst, in a voyage from Panama to Shanghai, a saving of 1200 miles is effected.

But this is not all the advantage to be derived from a knowledge of the principles of great circle sailing in the Pacific. Previously to 1847, the route proposed for steamers, between the west coast of America and China, was from Panama, coaling at the Sandwich Islands—a distance of about 9,500 miles, against 5,000 by the route known as Lieutenant Maury's track. By the chart, the Panama route appears the better; but, on examining the globe, the error of the chart is made apparent. We need not, however, select as our illustration a track in which our American friends are more interested than ourselves. There is a route which might be daily traversed by Liverpool sailing ships, which, as a case of great circle sailing, may be adduced as an example of its value. Many ships that take out freights of deals, slate, or bricks to Australia, call, on the homeward voyage, at the Chincha Islands for a cargo of guano. The route usually taken is by the north of New Zealand—the most direct, as appears by the chart, but not so if we consult the globe. The distance by the great circle is nearly 1,000 miles less. But this is not the only advantage. The great circle takes the ship into regions in which the winds are more favorable, and, in other respects, more advantageous for Navigation.

A friend of mine was speaking of great circle sailing, a few days since, when he remarked that he did not much value it, because the mariner should consult the winds, and be rather guided by them, than be induced to adopt the great circle route in shortening his distance. I agree with him that the greatest value should be attached to favorable winds. No practical man would advocate the adoption of any such route without considering the winds that prevail in the region through which he intends to navigate; but I contend, that, with all the knowledge of the winds that I hope may hereafter result from the system introduced by Lieutenant Maury, still he could not avail himself of the advantage of such knowledge, if ignorant of the principles of great circle sailing. Where is the mariner, whose knowledge of this earth is derived from a chart of Mercator's projection, who would ever think of sailing to the southward so high as the 60th parallel, in order to reach the Chincha Islands? For the sake of favorable winds, the passage through Cook's Strait was proposed, but never to the mariner would it have been suggested to enter the regions of the westerly trades, except he understood the principles of great circle sailing.

But I will now refer to another example, to prove the necessity of a knowledge of this earth as a globe, in order to avail ourselves

practically of any acquaintance with the nature of the winds that prevail in various regions of the ocean. Great circle sailing does not effect so much saving of distance under some circumstances as under others. If we have the equator between the ship and her port, a considerable saving in distance cannot be effected: thus, in a voyage between Panama and Australia, the difference between the Mercator's track and the great circle route is only 170 miles, if it were practical. But New Zealand comes in the great circle track, so that there are three routes from which the mariner can make his choice, neither differing more than 100 miles from the other; they are the rhumb, or Mercator's track, the great circle route by the north of New Zealand, and the great circle by the south of New Zealand. These routes separate from each other 2,000 miles and upwards, have winds of a very different character prevailing. I was consulted as to the best route a steamer might take, in sailing from Panama to Australia and back. Had I known no more of the earth's surface than that which I derived from Mercator's chart, I should have had the difficult problem to solve of balancing winds against distance. But the knowledge of the earth's true surface made the question easy of solution. I find by the south of New Zealand, the most favorable winds that blow for a voyage from Australia to Panama. From Panama to Australia, by the great circle, north of New Zealand, we get as favorable winds as by the rhumb track; and, although we save only 70 miles of distance, we avoid the innumerable dangers which lie in the Mercator's track, in which we should have been entangled in the Low Archipelago, in Dangerous Archipelago—ominous name—amongst coral reefs without number, atolls, lagoon islands, innumerable rocks and unknown islands. This, perhaps, forms the most striking illustration of the value of great circle sailing, in giving us the choice of more than one route.

(To be continued.)

HONORARY REWARDS.

Testimonial to Capt. Wilson, of the Philanthropist.—Captain Wilson of the *Philanthropist* having, on a recent occasion, fallen in with the American ship *Continent* (Capt. Drummond) leaky, and otherwise in great distress, with a number of passengers on board, from New York to Liverpool, rendered to the distressed vessel that assistance which humanity dictates—not only taking charge of the passengers, and remaining near the *Continent* until the leak was stopped, but did not pursue his own course until, with a fair wind, there seemed every probability of the *Continent* reaching her port of destination in safety.

These circumstances having been brought under the notice of the Committee of the "Liverpool Shipwreck and Humane Society," (Nov. 28, 1853), *they unanimously voted to Capt. Wilson a Silver Medal, of the First Class, to mark their high appreciation of his services on the above occasion.*

St. John (N. B.), Nov. 19, 1853.—The Corporation intend to present to each man who, in the life-boat of the *Eastern City*, rescued the crew of the schooner *Marie*, a massive Silver Medal, bearing the following appropriate inscription:—"The Corporation of the city of St. John (N. B.) to Captain SIMON H. PIKE, THOMAS LONG, and ALBERT W. SCOTT, in admiration of their heroism, in successfully rescuing from destruction the crew of the schooner *Marie*, during the severe gale of October 25, 1853."

Preservation of Life from Shipwreck.—At a recent meeting of the General Committee of the "Royal National Institution for the Preservation of Life from Shipwreck," held at the offices, John Street, Adelphi, the Gold Medallion of the Society was voted to Captain LUDLOW, of the American barque *Monmouth*, in admiration of his noble and humane conduct to the unfortunate crew and passengers of the emigrant ship *Meridian*. The Silver Medal of the Society was voted to BENJAMIN HERRINGTON and WILLIAM WATERS, coxswains of the Southwold life-boat, who had been off respectively ten and nine times in the life-boats of that place, and were present at the saving, severally, of forty and thirty-eight shipwrecked persons; and who had, only a few weeks since, assisted at the saving of nine lives, in the Southwold life-boat, from the brig *Sheraton Grange*, of Sunderland. A reward of £4 10s. was also granted to the crew of the Boulmer life-boat, for saving the crew, consisting of seven men, of the *Robert Nicol*, of Perth. The Silver Medal was also voted to Mr. HENRY HAMILTON, of Balbriggan, for his gallant conduct in having gone off in a small life-boat, to the rescue of three out of seven of the crew of the brig *Agnes*. The poor fellows had been exposed fifty hours in their perilous position, and it was only after three attempts in the life-boat that they were saved.

Presentation to Capt. Ludlow.—At a recent meeting of the Committee of the "Shipwrecked Fishermen's and Mariners' Royal Benevolent Society," the following minute, proposed by Capt. J. S. Lean, R.N., seconded by Capt. Charles A. Barlow, R.N., C.B., was carried unanimously:—"That this Committee view with feelings of admiration the conduct of Captain LUDLOW, of the American barque *Monmouth*, in standing off and on for nine days, until he had rescued every sufferer (consisting of 104 persons) alive on the island of Amsterdam, saved from the wreck of the *Meridian*, and his benevolent care of them while on board his vessel; and considering that the manner in which he exerted himself, in the cause of humanity, does honor both to his character as a sailor and a man, do therefore award to him the *Gold Medal* of this Institution, to be accompanied by a copy of this minute.

And, as this Committee have been given to understand that it is proposed to move a subscription in the City to present a testimonial to Captain Ludlow, the Secretary is hereby authorised to communicate with the movers, that the award now made might be noticed at the head of the list of subscribers."

Presentation to Capt. Key.—"The South Holland Institution for the Preservation of Life from Shipwreck," established in Rotterdam, has presented to Capt. Joseph Key, of the brig *William*, of the port of Harrington, the *Gold Medal* of the Institution, "as a testimonial and lasting memorial of his praiseworthy and noble conduct exhibited on 11th September last, on the outward-bound voyage to Quebec, in lat. 46° 3′ N., long. 31° 17′ W., in saving the crew, consisting of seven men, from the dismasted and otherwise-disabled Dutch galliot, *Ida Wubbina*; and, after treating them with cordial humanity, putting part of them on board the English ship *Minerva*, and taking the remainder to Quebec." The crew of the *William* were also presented with £5.

CERTIFICATES CANCELLED.

(The Investigations are instituted under the 28th section of the Mercantile Marine Act.)

Bristol.—Charges of incompetence and misconduct having been preferred by the owners of the brig *Arab*, of Bristol, against George C. Robertson, late chief mate of that vessel, the Local Marine Board of Bristol having found him guilty of the above charges, the Board of Trade have, upon consideration of the report and evidence, directed that his certificate shall be cancelled.

Dundee.—Charges of incompetence and habitual drunkenness having been brought against William Young, late master of the brig *Vesta*, of Dundee, the Local Marine Board of Dundee having found him guilty of the above charges, the Board of Trade have, upon consideration of the report and evidence, directed that his certificate shall be cancelled.

Charges of drunkenness and insubordination having been preferred, by the master of the *Ruthenia*, of Dundee, against Henry Wakefield, late mate of that vessel, the Local Marine Board of Dundee having found him guilty of the above charges, the Board of Trade have, upon consideration of the report and evidence, directed that his certificate shall be cancelled.

LEGAL DECISIONS.

LIVERPOOL COUNTY COURT, *Jan.—Running-down of the Bell Buoy: Relative responsibility of Pilot and Captain.*—An action was brought, by the Liverpool Dock Trustees, against one of the owners of the United States' Royal Mail Steamer, *Baltic*, for damages occasioned by that vessel having run down the Bell Buoy Beacon, at the mouth of the Channel, in April last, while in charge of a pilot. The buoy having been sunk, the action was brought to recover the cost of raising and repairing it; the application being grounded upon the statement that the speed at which the steamer was going was twelve knots an hour—too great a rate of speed for a vessel so large as the *Baltic*, entering a river; while the defence was that, the vessel having been placed in the hands of a licensed pilot, according to the Act of Parliament, the owners of the ship were relieved of further responsibility. This latter view was concurred in by Joseph Pollock, Esq., who gave his decision for the defendants.

COURT OF QUEEN'S BENCH, *Jan.* 18*th.—The Right of a Seaman to prosecute the Shipowner for neglecting to supply Medicines on board Ship.*—In an action against the owner of a vessel, to recover from him damages for not having properly supplied that vessel with medicines, according to the provisions of the 7th and 8th Vict., cap. 112, the plaintiff had been engaged to serve as a seaman on board the vessel, on a voyage to Calcutta. Lord Campbell delivered judgment:—After stating the facts of the case, and the question which was raised upon them, he said that the point was, whether this action could be maintained by a private individual in respect of some act from the neglect of which he had suffered inconvenience, that act being one which the Legislature had, as a matter of public benefit, commanded to be done, and for the neglect of doing which it had affixed a special penalty. The argument was, that there was no remedy for the neglect of this prescribed act, except that of the penalty, and that an action for the individual injury was not maintainable. It was clear, however, that though an indictment might not lie for the breach of a particular public duty, where the same clause in a statute first created the duty and then affixed a special penalty to the neglect of it, that could not affect the question, where the neglect to perform the public duty, in addition to its being a public wrong, operates also as a private injury, and where, in consequence of that injury, a private remedy ought also to exist. No authority had been cited to show that, in such a case as the present, the common law right to maintain an action for a breach of a public duty, where a private injury resulted from such breach of public duty, was taken away merely because the breach of the public duty was liable to be visited by a penalty to be sued for by a common informer. The penalty was imposed for the public wrong, but that did not prevent the private remedy. The court was of opinion that the defendant, having failed to comply with the provisions of the act, which was passed for the benefit of seamen, both upon principle and authority, that the action could be maintained in respect of the breach of this statutory regulation. Judgment for the plaintiff.

MELBOURNE (N.S.W.).—*Breaches of the Passenger Act.*—Captain Howes, being convicted of divers breaches of the Passenger Act, at the Williamstown Police-court, was fined for them in the aggregate amount of £1,800. Shipmasters who, for the sake of a little extra and illicit profit on their passengers' fare, curtail them of those stipulated comforts for which they pay, and to which they are entitled, deserve to be made an example of. But, with respect to breaches of the Passenger Act, it sometimes happens that while the captain is but in part responsible, the whole burden of punishment falls upon his unlucky shoulders; and so it has chanced in the present case. In default of payment of the enormous fine imposed upon him, Capt. Howes has been condemned to a series of terms of imprisonment, amounting altogether to nearly thirty years. This tremendous sentence has begun to take effect; in the hurry and bustle of our

colonial existence, the waves of time are rapidly closing over the whole transaction, and Capt. Howes may pass the remainder of his days within the walls of the gaol, without ever being heard of again, unless some one comes to his assistance. We do not extenuate the captain; and though it is to be wished that, by the forfeiture of the vessel or some other stringent measure, the owners could be made to suffer most soundly for the offence to which he has been an accomplice, we can quite see the propriety of teaching captains the lesson that they must not, with impunity, be the tools of heartless and law-breaking owners. — *Melbourne Morning Herald.*

SYDNEY (N.S.W.) *Oct. 5th.— Unlawful Detention of Ship Letters and Newspapers.*—Captain Both Martin, of the ship Singapore, from England, was charged at the Water Police-office with having unlawfully detained forty-six letters and ninety newspapers, for a period of nine days after his arrival in port. The captain pleaded guilty, and was fined 46s., with £1 1s. professional costs and 16s. court costs.—Captain Morrice, of the ship Walter Morrice, was charged by the Postmaster-General with detaining a mail-bag, containing sixty-seven letters, for the space of twenty-four hours after his arrival in port. Capt. Morrice was fined one shilling each, or £3 7s., with £1 1s. professional costs and £1 8s. court costs.

IMPORTANT TO SHIPMASTERS. — In the case of "Potter *v.* Pettis," the Supreme Court of Rhode Island has recently decided that vessels have a right to use a warp in getting in and out of the harbour of a navigable river, and to extend the warp across the entire channel; but, on the approach of another vessel, it is the duty of the vessel using the warp to take notice of such approach, and so to lower the warp as to give a free passage through the ordinary travelled part of the channel, and to 'indicate to the approaching vessel the point intended for her passage. The approaching party is not bound to pass at the point indicated, but may pass at a different point, if he honestly thinks it can be done without interference; but, in such case, he will be liable for the damage which ensues, unless he can prove that he disregarded the notice of the other vessel in the *bonâ fide* belief that he could so pass without damage to it, and the burden of proving this will be upon him.—*Boston (U.S.) Daily Advertiser.*

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from Dec. 26, 1853, to Jan. 27, 1854.

Alterations in the Positions of the Buoys on the North Pampus and Scheelhoek Banks.— Firstly. That the Red Buoy, on the North Pampus of the mouth of Goeree, has been substituted by a Black Buoy, and is likewise now placed North-westerly, in the following directions:—The Steeple of Brielle, in the Wood of Rockanje, and the Church Steeple of Helvoetsluys, in the small Wood at the Kwak.

Bearings and Soundings:—Goeree, SW. ¾ W.; Helvoetsluys, SE. by unadjusted compass, at the depth of 52 palms at ordinary low water, which Buoy (when entering) has to be kept on the larboard side.

Secondly. That at the dry North-easterly point of the Scheelhoek Bank, a White Buoy is stationed in the directions:—The Steeple of Goeree on the Eastern side of the Pier-head of said place; and the Pilot Office of Helvoetsluys, touching the point of the Kwak.

Bearings and Soundings:—Goeree, W. ¾ S.; Lighthouse of Helvoetsluys, SE. ¼ S., at 46 palms depth at ordinary low water, to be kept on the starboard side on entering.

Thirdly. That the White Buoy, stationed at the North point of the Bank Scheelhoek, termed the North Pampus, has been furnished with a White Flag on a Pole, in order to its being better distinguished from the before-mentioned White Buoy.

Lights on the River Elbe—Changes to take place about the End of December, 1853.—1. *Neuwerk Fixed Light.*—The Low Light on the Island of Neuwerk, at the entrance of the River Elbe, is intended to be screened so as not to be seen by a vessel when it is between the bearings of S. by W. and SW. by S.; or, when she is between the Buoy No. 5 (V.) and the Buoy F., which carries a vane, off Neuwerk Island.

The intention of this arrangement is, to apprise vessels coming up the river that they are entering the narrow and dangerous part of the channel, and that it would be prudent, therefore, to anchor. If, however, they persist in standing on, as soon as the Light re-appears they should alter the course from SE. by E. to E. by S., and even East, in order to allow for the indraft of the Eitzen Loch, which is strong from first to half flood.

2. *Kugelbaak Fixed Light.*—At Kugelbaak, or the Ball Beacon, a Fixed Light is to be established, which will be visible between the bearings of SE. by S, and SW., or from the Buoy J. to the Buoy L. or No. 10 (X.).

A vessel coming up the river, on opening this Light, being thus apprised that she is to the Eastward of the Buoy J., should immediately alter her course to SE. or SE. ½ S. until the Kugelbaak and Cuxhaven Lights are in one, about S. by E. ½ E., and steer directly for them till she shoals the water to six or four fathoms, according as it is high or low water. She may then take up a SE. or SE. by S. course, so as to bring Cuxhaven Light on her starboard bow. When she has passed the Buoy L. she will lose sight of the Kugelbaak Light, and be in eight or ten fathoms, from whence a S. by E. course will clear all the shoals up to anchorage of Cuxhaven; but she should recollect that this Reach is frequently so much crowded by vessels as to require the utmost caution to avoid them.

3. *Cuxhaven Light.*—When seen from the lower part of the river will appear as a *Flashing* Light, and will thus be distinguished from the Fixed Light of Kugelbaak.

Alteration in the Light Beacons at List, on the Island of Sylt.—In order the better to distinguish, from seaward, the *East* from the *West* Light Beacon at List, in the Island of Sylt, W. coast of Sleswig, the former has been elevated from 97 to 110 feet above the level of the Sea.

River Tees—Bran Sand Lights.—In consequence of an alteration of the Entrance Channel to the River Tees, the Bran Sand Lights will will not be lighted from and after the 20th January, until further notice. Masters of Ships taking the Tees may run safely up to the Floating Light by keeping the back companion to that Light about a handspike open to the North or Floating Light, bearing SW. by S. ½ W.

N.B. Depth of water on the bar, at low-water spring tides, eleven feet.

Port of Hartlepool, Jan. 6th,—Some Vessels have been wrecked, during the gales of the 4th and 5th inst., near the entrance of the Old Harbour, which renders it advisable that Masters should obtain a pilot before approaching the Harbour.

The Wreck most in the way lies close to the Eastward of the Beacon Buoy, with the Old Pier Light bearing NNE., distant 165 yards.

Vessels entering with the leading lights in one, and by not opening them to the Westward, will clear the danger.

Wreck in St. Ives Bay, Cornwall, Jan. 13th.—A Green Buoy, marked with the word "Wreck," has been placed 30 fathoms N. of a Vessel sunk in St. Ives Bay.

The Buoy lies in Ten Fathoms at Low Water Spring Tides, with the following Mark and Compass Bearings, viz.:—

Lelant Church, open South of Godrevy Island,	SW. ½ W.
Lethega Point	SE. ½ S.
The Stones	NW. by W.

Light at Southsea Castle, Jan. 17th.—On this date some experiments commenced with the Light at Southsea Castle; and, in consequence, it is not to be considered as any guide, until further notice from the Hydrographic Office.

Light on Cape Corrobedo, Atlantic Coast of Spain.—On February 20th a Fixed Light will be displayed from Cape Corrobedo, in Galicia, NW. coast of Spain. It will stand in lat. 42° 34′ 38″ N., long. 9° 4′ 32″ W. of Greenwich; height, 102 feet above the sea; visible about 15 miles.

Mediterranean Sea—Coast of Valencia, Spain—Light on Plana Island.—Intelligence has been received that this Light (vide *Mer.*

Mar. Mag. No. I., p. 35) cannot be displayed so early as was anticipated, and further notice will be given on the subject.

Light on Cape Prior—Atlantic Coast of Spain.—From 1st March next, a new Lighthouse, established on the "North side of Cape Prior," in Galicia, will be lighted every night from sunset to sunrise; lat. 43° 33′ 40″ N. long., 2° 6′ 52″ W., from the Observatory of San Fernando; permanent light; elevation 490 feet; visible about fifteen miles.

NAUTICAL MEMORANDA.

Northern Lighthouses. — Reduction of Light Duties or Tolls, from and after Jan. 1st, 1854:—

I. Coasting Vessels.—1. The rate of one farthing per ton, presently payable, shall, in every instance, be reduced to one-sixteenth of a penny per ton.

2. The rate of one half-penny per ton, presently payable, shall, in every instance, be reduced to two-sixteenths of a penny per ton.

3. From the above reduced Tolls, and all other Tolls payable by Coasting Vessels, a further abatement shall be made of ten per cent. from the gross amount of each charge.

II. Oversea Vessels.—The rates of Toll payable, per ton or per Vessel, shall remain as at present; but an abatement of 25 per cent, is to be made from the gross amount of each charge.

New Regulations at the Chincha Islands.—By a decree of the Peruvian Government, dated Lima, Nov. 23rd, 1853, vessels laden with Guano are no longer compelled to touch at Callao:—

"It being unnecessary that the vessels occupied in carrying Guano, and which go with this object to the Chincha Islands with the permission of the Government, should return to Callao for the purpose only of fulfilling the formality of finally closing their register, which can be effected at the said islands—it is resolved that the captains of vessels loaded with Guano, who wish to depart direct from the Chincha Islands to the place of discharge, may do so; and, in such case, they must be cleared by the chief of the station or the Government which may be established there, who shall give notice to the Custom-house of Callao of those to whom the permission is conceded. And in consideration that, by this measure, the owners of ships derive a benefit, and that the excessive cost occasioned by the demurrage, on account of the impossibility of exporting the quantity of tons required for the demands of the different markets, ten lay days more than those fixed in the charters for Guano shall be allowed in compensation for the

concession made. At the same time, the consignees of those ships shall exact that they leave at the islands the quantity of water allotted to them, until the Government can make other arrangements."

New Shoal in the S. Pacific.—Capt. Wm. Pousland, of the ship *Manlius*, at Panama, from Boston, reports;—At 3 30 p.m. Nov. 19, 1853, passed a shoal or reef of rocks just a-wash with the water, with the sea constantly breaking over it, running N. by E. and S. by W. by compass, from 100 to 300 feet in length. It can be seen in the day-time at the distance of five miles, lat. 13° 45′ S., long. 82° 44′ W.

NAUTICAL NOTES.

Postal Communication with Australia.—The following resolution of a Committee of the whole House of the Legislative Council of Victoria, passed on the 12th October, 1853:—

"That it is the opinion of this Committee that £3,000 per month be paid from the public revenue, to any and every company which shall engage to carry, during the whole year, from the 1st of March, 1854, to the 1st of March, 1855, a regular monthly mail from England to Melbourne, within 65 days for the first six months, and within 60 days for the last six months; the time of the voyage to be reckoned from the time of departure from England to arriving in Hobson's Bay; and that such sum of £3,000 be paid only for those months in which the voyage may have been successfully performed within the time specified."

East India and China Shipping.—The East India and China Association have published their usual comparative statement of the number of ships, both British and Foreign, with their aggregate tonnage, entered inward and cleared outward, with cargo from and to places within the limits of the East India Company's Charter, in the years 1852 and 1853. According to the statistics of vessels entered inward, the increase, in the case of the port of London, has been 7 vessels and 27,909 tonnage—the difference between 711 vessels, with 384,531 tonnage, in 1853, and 704 vessels, with 356,622 tonnage, in 1852. The return for Liverpool shows an increase of 52 vessels and 46,672 tonnage—the difference between 255 vessels, with 155,741 tonnage, and 203 vessels, with 109,069 tonnage. There is also an increase in the case of Bristol and Hull of 6 vessels and 2,356 tonnage—the arrivals in 1852 having been 30 vessels, with 11,613 tonnage, and in 1853, 36 vessels, with 13,969 tonnage. The return for the Clyde exhibits a decrease of 7 vessels and 3,281 tonnage—the difference between 39 vessels, with 14,577 tonnage, and 46 vessels, with 17,858 tonnage. The increase on the whole statement is 58

vessels and 73,656 tonnage—the difference between 1,041 vessels, with 568,818 tonnage, in 1853, and 983 vessels, with 495,162 tonnage in 1852. Of this increase the principal consists of arrivals from Sydney, Bombay, Madras, and Ceylon. The statistics of vessels cleared outward show the large increase in the case of the port of London of 312 vessels and 143,412 tonnage—the difference between 954 vessels, with 485,972 tonnage, in 1853, and 642 vessels, with 342,560 tonnage, in 1852. The return for Liverpool shows an increase of 139 vessels and 52,498 tonnage—the difference between 515 vessels, with 280,054 tonnage, and 376 vessels, with 227,556 tonnage, Bristol and Hull figure for an increase of 18 vessels and 2,894 tonnage, the clearances in 1853 having been 21 vessels, with 4,888 tonnage, while in 1852 they only comprised 3 vessels, with 1,994 tonnage. The return for the Clyde exhibits an increase of 103 vessels and 20,138 tonnage—the difference between 188 vessels, with 61,552 tonnage, and 85 vessels, with 41,414 tonnage. The increase on the whole statement is 572 vessels, and 218,942 tonnage—the difference between 1,678 vessels, with 832,466 tonnage, and 1,106 vessels, with 613,524 tonnage. Of this increase, nearly the entire amount arises from an augmented trade with the Australian colonies and New Zealand.

Peninsular and Oriental Company's Screw Steamer, Himalaya.—The *Himalaya*, Capt. A. Kellock, from her first trial at sea, promises well. She left Greenhithe at 9 a.m. on Thursday (Jan. 12th) but, after proceeding to Sea Reach, a thick fog came on, and she was obliged to anchor for a considerable time; and on proceeding, after the fog partially closed, was compelled to slow her engines several times between the Nore Light and North Foreland. She, however, performed this distance (31 miles) in just two hours. Passing through the Downs, she ran from the North to the South Foreland (17 miles), with a strong W. wind, in 1h. 20m.; thence to Dungeness (21 miles) in 1h. 30m. From Dungeness to Beachy Head (29 miles), blowing very strong from SSW., with a heavy swell on and tide against her, she was 3h.; thence to abreast of the Ower's Light-ship (36 miles), with an increasing breeze, she was 3h. 30m., having to slow several times. She finally anchored in St. Helen's Roads at 3 a.m. on Friday. It was calculated that the *Himalaya* was 13 hours under way, and averaged 13½ knots per hour, which, considering the weather she met with from Dungeness to the Nab, is a very high rate of speed. Fore and aft canvass was set for a short time, during which she went fully 15 knots.

The following Table shows the result of four runs at the measured mile in Stokes Bay:—

	m.	s.		knots.	
First run, with tide	4	10	=	14·400	Mean of four runs, 13.923 knots per hour.
Second run, against tide	4	39	=	12·903	
Third run, with tide	3	54	=	15·384	
Fourth run, against tide	4	56	=	12·162	

This was considered most satisfactory by the numerous naval officers and scientific men on board.

The Electric Time-Ball at Liverpool.—Caution to Captains.—It having been suspected that the Electric Time-ball, recently erected in Castle Street, Liverpool, and connected with Greenwich Observatory, failed considerably in giving the *correct* Greenwich Time, Mr. Hartnup, of the Liverpool Observatory, undertook to note, on three different occasions, the errors of this professed mean time exhibitor. The results are given as follow:—

December 17	....	0m 7·2s	Slow.
„ 19	....	0 19·1	„
„ 20	....	1 21·0	„

As Mr. Hartnup very justly observes, "in such a great mercantile port as Liverpool, those who profess to give Greenwich Time in so public a way as that of dropping a Signal Ball, should be held responsible by the authorities for its accuracy."

Time Balls, placed in good situations at the various ports of the kingdom, would be extremely serviceable to Commanders of Ships; but they must be properly managed by those who understand the value of a second of time to Navigators.

Extract from a Letter with respect to Calcutta Claims.—"Twist was formerly packed by hydraulic presses, moved by hand-pumps; steam is now used, and the bales now measure about 16 feet instead of 22; the consequence of this is, that they become almost dead weight, instead of measurement bales, and the vessels go too deep to sea.

Guano.—Several vessels have recently arrived at ports in the United States with Guano, brought from islands in the Carribean Sea, called the "Musquito Keys." The quality of this Guano is not equal to that from the coast of Peru, as the prevalent rains wash out some of the salts.—*Boston (U.S.) Daily Advertiser.*

NEW BOOKS.

Hand-Book to the Local Marine Board Examination. Fourth Edition. Mrs. Janet Taylor, 104, *Minories, London*, 1854.

THIS book is intended as a Guide to the Officers—of all grades—of the Merchant Service, in the Examinations they are required to undergo before the Local Marine Board. It does not profess to include Seamanship, which is a subject to which seamen generally devote more attention than to Navigation and Nautical Astronomy, forgetful that the latter branch of their profession is as essential as the former, if they desire to advance in life. So far as we have looked through the book, it seems judiciously arranged, and the different subjects carefully drawn up, and to the purpose; in fact, without any pretensions, it is the best book of the kind that has yet been pub-

lished. A good method has been adopted in regard to the answers (given at the end of the work), whereby the student at sea can at once fix on that part of the solution in which he may have committed an error, by which means he will be encouraged to progress—and to improve himself.

The Local Marine Boards' New Guide. By A. Macdiarmid. J. R. Cameron, Liverpool, 1854.

THIS little work is somewhat similar to the former, and arranged for the same purposes. The questions are such as fall continually within the experience of the mariner, and we cannot doubt the book will answer the end for which it is intended—the improvement of the seaman in those parts of his profession in which he is generally most deficient.

NEW CHARTS.

Charts and Books published and corrrected by the Hydrographic Office, Admiralty. Sold by J. D. Potter, Poultry, and Tower Hill, London; and the principal Chartsellers; also at the various Custom Houses of the Kingdom.

		s.	d.
English Lights	corrected to February, 1854	1	0
French and Spanish ditto	„ „	0	6
Belgian, Danish, and Kattegat	„ „	1	0
East India	„ November, 1853	0	3
Baltic, Revel Road	Russian Survey, 1846	1	6
„ Aland Isles	Swedish „ 1807	2	6
„ Entrances to the Belts	Danish „	1	6
Greenland, Holstenborg	Capt. Inglefield, R.N., 1853	1	6
Black Sea, Achmechet Harbour,	Russian Survey	0	6
„ Balaklova Port	„	0	6
Australia, South Coast, Sheet 3,	corrected to 1853	3	0
„ Directory	Fourth Edition, 1853	2	0

EDWARD DUNSTERVILLE, MASTER, R.N.

Admiralty, Jan. 24th, 1854.

No. I—In page 13, line 22, *for* "uncomplied," *read* "complied."
„ 24, „ 2, "European," „ "Asiatic."

[*All communications to be addressed* "EDITOR OF THE MERCANTILE MARINE MAGAZINE, *care of Mr. W. Foster,* 114, *Fenchurch Street, London. N.B. The real name and address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*]

To Correspondents—Several Communications will be noticed next month.

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

MARCH, 1854.

ON THE OCCURRENCE OF A REVOLVING STORM IN THE SOUTH PACIFIC OCEAN.

Sir John Herschel has said "the habitual track of hurricanes are but imperfectly known, and all which tends to throw light on this part of the subject is of the last importance to Navigation." With such an opinion as this, there is no need of apology in introducing to our readers the particulars of a gale in the Southern Pacific—a locality from which we have not, hitherto, received any accounts (that we are aware of) of gales of a rotatory character, encountered by the numerous vessels navigating it, in their passages homeward by Cape Horn. Not that we apprehend, from the paucity of such accounts, that the phenomena are by any means rare. On the other hand, we conceive that gales, in these latitudes, are of very frequent occurrence, but, scarcely ever exceeding a certain force, they either baffle the navigator or assist him, as the case may be, without calling for increased attention or exertion, so that the logs present nothing of a very extraordinary character.

The alarming of the mariner, the dismasting of his vessel, and the thousand ills that attend an ill-fated ship, with her crew and passengers, that may be swallowed in the vortex, are not the only feats of a revolving storm. There is scarcely any evil that exists in this world without our being able to extract some benefit from it; and so it is with cyclones; if they have done their work of destruction—the time is now rapidly hastening when they shall do good service to navigation—when the vessels of our Merchant Service, by means of the superior intelligence of their captains, shall ride upon the wings of the hurricane, and be borne by it in safety; while ignorance and presumption meet their merited reward in contending with contrary winds, being washed with heavy seas, and running the chance of foundering in the centre of the storm.

We have been favored with the log of the *Duke of Richmond*, lately returned to this country from Australia, by the way of Cape Horn; accompanying the log is a remarkably well-kept register of the barometer. The instrument was read during the passage out and home every two hours. It is likely to be of great service in elucidating many questions connected with the meteorology of the ocean, and appears to be extremely valuable in fixing some of the more important features of revolving gales, several of which were fell in with during the voyage.

The gale we have selected, as possessing the greatest interest for our readers, was first encountered in lat. 53° 51′ S., long. 154° 40′ W.; with this gale the ship ran during nine days; she lost it in 53° 10′ S. and 120° 49′ W. We give a diagram of her course, also the track of the gale; the positions of each at noon are given, so far as the log enables us to make them out; the line joining the ship and centre of the storm, each day, is in accordance with the wind, as given in the log. We shall first solicit attention to the log, next to a few comments we may offer thereon, and lastly to the application of the whole to navigation, in the shape of some remarks on "Storm Sailing."

Extract from the Log of The Duke of Richmond, Captain T. Barclay, on her Voyage Homeward from Portland Bay to London.

1853.

Monday, July 11.—Lat. observed .... 53° 36′ S.
Long. chronometer...... 159 31 W.
Course ....N. 84½ E. 125 miles.

Light north winds and calms. Barometer very steady; sea smooth; altogether like summer weather. (The barometric record says "damp weather.") Thermometer 49°.

BAROMETER.

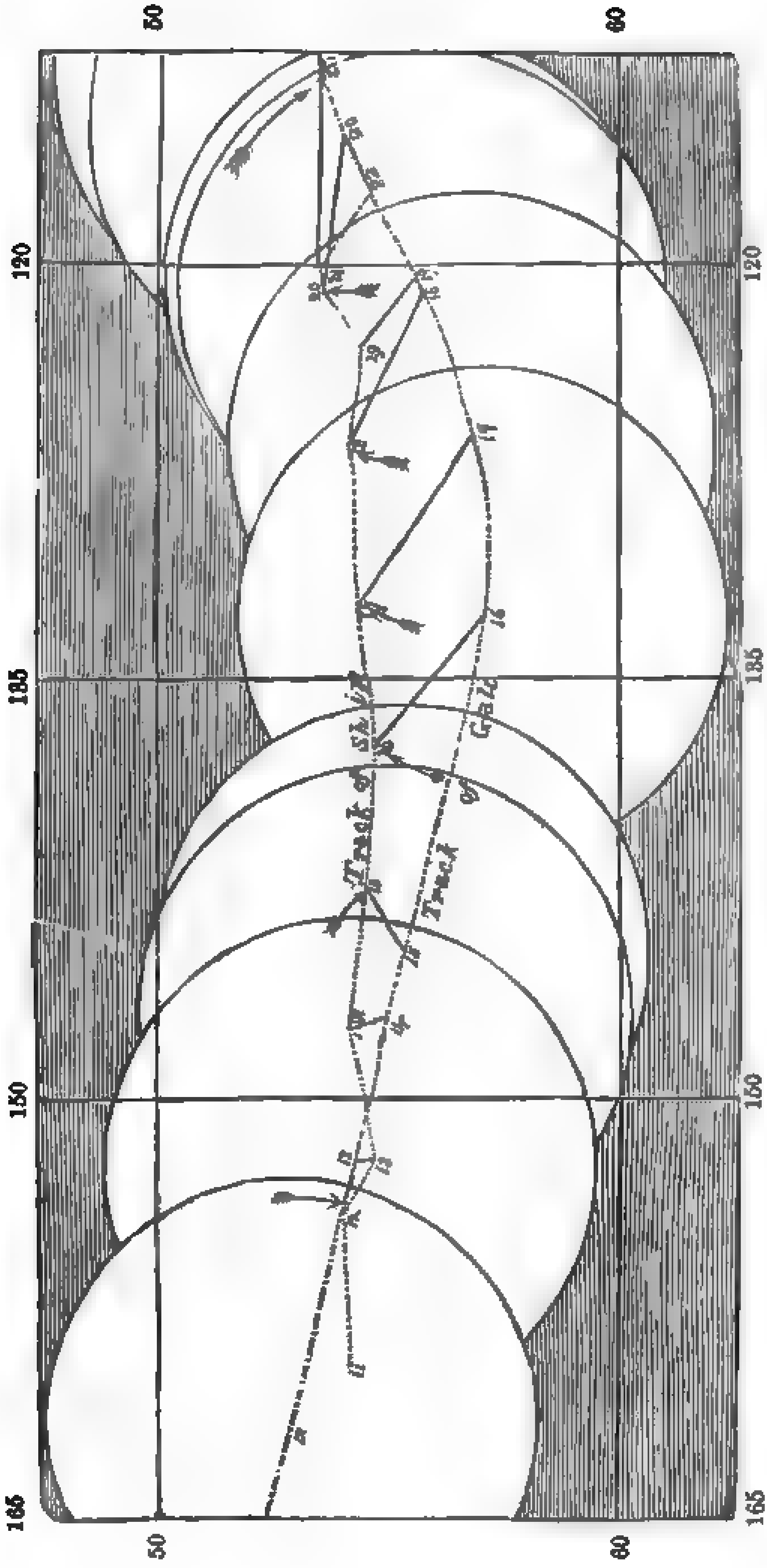
Noon.	2	4	6	8	10	M.	2	4	6	8	10
30·15	·14	·14	·12	·10	·06	·06	·10	·10	·05	·02	·02

Tuesday, July 12.—Lat. by account .... 53° 48′ S.
Long. „ . ... 154 45 W.
Course.................S. 86 E. 171 miles.

Ship taking the Gale; centre bears W. by N. of her.—Begins with moderate north wind; but, towards 9 p.m., the barometer began to fall and the wind to increase from N. by E.; and at noon, the barometer is 29·64, blowing a strong gale, with thick rain. Thermometer 46°.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
30·02	·01	·00	·00	30·00	29·90	·90	·84	·82	·78	·70	·64


50
60
120
135
150
165
Track of Ship
Track of Gale

Wednesday, July 13.—Lat. by account ...... 54° 35′ S.
Long. „ ...... 152 20 W.
Course...............S. 54 E. 93 miles.

Ship crossing in front of the Gale's centre,—Begins with a strong NE. wind, which gradually increases to a very heavy gale, with dense fog; the barometer also fell from 29·56 to 28·88 in twelve hours. Noon it stands 28·95, heavy NW. by N. gale, with fog. Sun obscured.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
29·56	·49	·40	·39	·20	29·12	28·95	·87	·88	·91	·95	·96

Thursday, July 14.—Lat. observed .... 54° 13′ S.
Long. chronometer ... 148 0 W.
Course ....N. 82 E. 155 miles.

Ship on the Meridian of the Gale, which passes her.—Strong gale all this day, veering from N. by W. to WSW.; heavy rain for the first part, latter part squally and fair. Very high NE. swell, part of the cyclone wave no doubt. Thermometer 49°.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
29·16	·15	·15	·13	·15	·08	·15	·20	·27	·35	·45	·52

Friday, July 15.—Lat. observed .... 54° 10′ S.
Long. chronometer ...... 143 0 W.
Course ....N. 89 E. 176 miles.

Storm rather lagging, Ship shooting a-head.—Throughout this day it has blown a very strong NW. gale, with snow squalls. Barometer oscillating from 29·30 to 29·51. High sea. Thermometer 48°.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
29.49	·48	·53	·39	·35	·37	·40	·46	·50	·48	·45	·40

Saturday, July 16.—Lat. observed .... 54° 2′ S.
Long. chronometer ... 137 59 W.
Course..............N. 87 E. 180 miles.

Ship keeping pretty well up with the Storm, but drawing from the centre.—Heavy gales, with very severe squalls of snow all this day; wind from WNW. to SW.; clouds surcharged with electricity, thunder and lightning having been observed. Barometer, as the wind hauled to SW., rose steadily from 29·50 to 30·00. Noon squalls not so severe. Thermometer 45°.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
29·51	·55	·53	·69	·71	·71	·75	·80	·84	·84	29·94	30·01

Sunday, July 17.—Lat. observed .... 53° 31′ S.
Long. chronometer ...... 133 6 W.
Course..................N. 79 E. 178 miles.

Gale in advance of the Ship, which is approaching the Margin.—Terrific gale of wind from WSW. to SW., with snow squalls as heavy as I have ever seen, and high cross sea; barometer, notwithstanding, mounting up to 30·83; water freezing on deck.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
30·29	·35	·40	·41	·49	·55	·60	·64	·70	·75	·85	·88

Monday, July 18.—Lat. observed........... 53° 23′ S.
Long. chronometer...... 128 52 W.
Course ....N. 87 E. 147 miles.

Ship runs with the Gale, which has recurved.—Strong gale, with snow squalls, for the most part of this day; wind from SSW. to W. Barometer has been as high as 30·90, *although there was no decrease in the force of the wind; ship under close-reefed main-topsail and reefed foresail.*

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
30·88	·87	·86	·85	·80	·80	·75	·70	·60	·60	·55	·48

Tuesday, July 19.—Lat. by account .... 53° 35′ S.
Long. „ .... 124 26 W.
Course ....S. 86 E. 160 miles.

Ship keeping in rear of the Gale, the centre of which is approaching her.—A very heavy gale has blown from W. and SW., with a sea threatening to swallow our poor ship; but what is very remarkable, although the gale has been accompanied with blinding torrents of rain, the barometer remained at 30·67 *for three hours after it blew hardest.* It then fell rapidly. *It gave us no warning, however, of the approach of the gale.** Noon blowing almost a hurricane.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
30·67	·50	·31	30·05	29·95	·62	·48	·40	·56	·68	·54	·50

Wednesday, July 20.—Lat. observed ...... 52° 55′ S.
Long. .... 122 29 W.
Course ....N. 54 E. 67 miles.

Gale outstripping the Ship, and bringing up her Barometer, as the margin again approaches her.—Wind SSW. to S. by E. A heavy gale of wind ushers in this day, with snow squalls heavier than I have ever

* *See* Comments.

seen in my life. The sea, at 8 p.m., became so high and cross that, finding we were in danger of sweeping the decks, brought the ship to under close reefed main-topsail, decks and ropes covered with ice. All night the squalls were very severe, and the snow froze as it fell; got a glimpse of the sun between the squalls.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
29·60	·61	·60	·54	·58	·60	·67	·72	29·80	30·10	·15	·21

Thursday, July 21.—Lat. by account ...... 53° 10′ S.
Long. „ ...... 120 49 W.
Course ....S. 78 E. 67 miles.

Ship losing the Gale.—Begins with strong S. gale, but towards 8 p.m. it moderated. Barometer rising, made more sail. I believe this gale to be over now, and would remark *that the barometer, during its continuance, has puzzled me*—its vibrations have been so sudden and irregular. I note this for further investigation. Sun obscured.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
30·30	·38	·49	·55	·58	·60	·60	·60	·66	·72	·65	·61

Friday, July 22.—Lat. by account .... 54° 3′ S.
Long. „ .... 116 39 W.
Course.................S. 70 E. 156 miles.

Fresh gale from WSW., with thick weather and rain. No observation for lat. or long.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
30·47	·48	·40	·40	·35	·19	·10	30·00	29·96	·96	29·98	30·00

Saturday, July 23.—Lat. by account ...... 54° 47′ S.
Long. „ ...... 113 10 W.
Course ....S. 70 E. 130 miles.

Wind WSW. to W., with thick rain and fog. No observation for lat. or long.

BAROMETER.

Noon.	2	4	6	8	10	M.	2	4	6	8	10
30·00	30·00	29·94	·90	·90	·90	·90	·95	29.96	30·08	·08	·08

COMMENTS.

It is highly probable that we have not a single instance on record, in which so much of the phenomena of a revolving gale has been made out from the log of a *single ship*, as the storm now under consideration. It is a most instructive instance, and derives nearly the whole of its value from the well-kept record of the barometer, every two hours, during the whole of the gale. Without this record, it would have been almost impossible to have connected the changes of the wind with the position of the vessel in the storm. They were well marked, it is true, but the barometer showed so clearly and unmistakably when the centre of the gale approached towards, or receded from, the ship, that the whole of the changes recorded, although they puzzled the Captain, have enabled us to lay down the *approximate* course of the hurricane with comparative ease; and we cannot too much urge on Commanders in the Merchant Service the importance of a well-kept series of barometric readings, even with the ordinary ship's barometer; they serve, oftentimes, to detect a cyclone, and enable the mariner to lay down its track, when the course of the vessel may be such that her Captain only experiences a spanking breeze from the same quadrant of the horizon for several days.

Both the barometer and the wind inform us that the ship took the gale at about 9 p.m. of July 12th. In her log, we read, towards 9 p.m. *the barometer began to fall, and the wind to increase from N. by E.*; at noon of the 13th, it was blowing a strong gale with thick rain; by this time the barometer had fallen four-tenths of an inch—the combined phenomena of wind and barometer being quite in accordance with a vessel entering a revolving storm.

The wind being N. by E. shows that she must have been *overtaken* by the storm, and become involved in the eastern semicircle, the centre bearing W. by N. of her. It would appear that the gale overhauled her very rapidly; for, by 2 a.m. of the 13th (ship's reckoning), the barometer was down to 28·87, the wind blowing a heavy gale from NE.; the centre was now NW. of her; it must, however, have been close upon her, with its track in such a direction that, when the barometer read *lowest*, she was immediately in front of the centre on the axis line of the storm, and crossing its path. Up to this time, she must have been sailing in the right hand semicircle, the hurricane gaining upon her.

Immediately after 2 a.m. the barometer slowly rises; both this instrument and the wind indicate her position to be materially altered, with regard to the centre of the storm. During the 14th, we have the barometer creeping up to 29·52, and the wind getting round to WSW., conditions that agree with the centre receding from the vessel, which is now in the NW. quadrant.

Upon consulting the diagram it will be seen that, between noons of the 12th and 13th, the hurricane was bearing almost directly down upon the vessel, and that, when not *on the axis line*, she was in the right-hand semicircle; by continuing on this side the axis line, her winds

would have become unfavorable, but by crossing she got into the left-hand semicircle, with winds that soon brought her on her course.

As this is the first revolving storm, in this part of the world, of which any records have reached us, and it is probable the paths of storms occurring here may, within certain limits, possess much similarity, it may not be out of place to notice that, had the ship's course been a little more easterly, she would have attained the left-hand semicircle previous to the great fall of the barometer, missed it, and obtained a fair wind. The thing is worth attention in these latitudes, when phenomena of this kind occur, to take up a good position in the left-hand semicircle, as near as possible on the northern edge.

We have now indications of the storm lagging in its course, and the ship shooting somewhat a-head; with the WSW. wind she makes a good run, and finds herself, on the 15th, in the NE. quadrant. While in the NW. quadrant she met with the constant attendant on the receding semicircle of a revolving storm. Her Captain records, a "very high NE. swell, part of the cyclone wave no doubt." The same high sea attends her during the 15th. The hurricane, however, did not stay long and allow the ship to outstrip it, for we find her on the 16th again, in the NW. quadrant, still experiencing a heavy gale, with thunder and lightning; as the wind hauled to the SW. the barometer steadily rose, clearly showing that the ship and centre were gradually parting company.

The 17th finds her still in the same quadrant, the NW., but here the Captain begins to be puzzled. He records a "terrific gale of wind from WSW. to SW.," "heavy snow squalls," as heavy as he had ever seen, and a high cross sea, notwithstanding, he says, "the barometer is mounting up to 30·88." While it appears exceedingly puzzling to account for so high a barometer with so strong a wind, our diagram, if it be constructed at all with any pretensions to accuracy, will make the matter clear. In the first instance, we find the *fall of the barometer not dependent on the velocity of the wind, but upon the amount of atmosphere above the ship.* All storm writers agree that that portion of the atmosphere, agitated by a revolving gale, assumes a funnel shape—the depression existing in the centre, and the accumulation around the edges; now we have this most distinctly shown by the record of the barometer kept on board the *Duke of Richmond.* When the centre was coming close down upon the vessel, the depression of the funnel was nearly over her, and her barometer read 28·88; as the centre recedes from her, the barometer rises until it reads 30·88, an altitude indicating the proximity of the margin. Under ordinary circumstances, we expect the wind to decrease in force as the ship gets towards the margin; but here, we have the remarkable fact of *the gyrations, apparently in the outer circles, preserving the same velocity as in the inner.* How far this may be an exception or a general law, in particular localities, remains to be shown. It is to be hoped the phenomenon will not be lost sight of, and that Captains will record the force of the wind, and especially the sail the ship is carrying, in every part of the gale.

On the 18th, we have the barometer very gradually falling, *but*

the wind no way decreasing in force, with a barometer upwards of 30½ inches. The ship is recorded as being "*under close reefed main-topsail and reefed foresail.*" There are two points worthy of note in the position of the vessel on this day. The wind, drawing round to SSW., indicates that the storm has recurved and, of course, the ship is drawing towards its centre; this, of itself, tends to explain the other point—the force of the wind remaining so constant; the barometer, however, has *fallen four-tenths of an inch.*

We now appear to arrive at two or three very important features in the course of the gale—its recurvature, a diminution of its velocity, and its probable breaking-up. The winds recorded on the 20th and 21st place the first of these features in an unmistakeable light; the centre is *eastward* of the vessel, which continuing, more or less, on her easterly course drew rapidly towards it, occasioning the barometer to fall very considerably. During the 20th, the wind hauled directly round to south, with so high a *cross* sea that the ship was brought to, under close reefed main-topsail, to prevent it sweeping the deck.

We have a remark or two to offer on the statement of the Captain, that *the barometer gave "no warning of the approach of the gale.*" Every movement of the barometer, during the gale, is in the most perfect accordance with the "Law of Storms." It has been said, in reference to the certainty of meteorological appearances heralding the approach of a hurricane:—

"It is quite true that the *depression* of the mercurial column occurs *after* the vessel has become involved in the gyrations of the cyclone, by which *the great value of the instrument is exhibited, not so much in the character of a prognosticator as a guide*, informing the seaman, when combined with the direction and veering of the wind, in which direction he should steer his vessel."

In this respect, the great value of the barometer is apparent in the case before us; the ship, in advance of the storm and on or near the axis line, experiences a rapid fall as the centre nears her. As she crosses the track of the storm and recedes from the centre, the barometer rises; arrived at her (probable) *greatest* distance from the centre, the instrument stands *highest;* the storm recurves—the ship approaches the centre—the glass falls—during the whole course of the gale; the barometer gave its legitimate warning; it stood in the position of a friendly guide, the only anomaly was, the terrific force of the wind with so great a pressure, as recorded on the 17th and 18th; whatever else might have differed from our usual experience, the barometer certainly did not.

Upon the storm recurving, it not only somewhat paused in its course, but appeared, immediately after the 21st, to break-up; for the ship, after that day, suddenly loses it. The Captain writes, "I believe this gale to be over now;" but he does not give us his reason for so writing. We, however, find no further indications of it; it is, therefore, probable that it was either dissipated or lifted up bodily into the higher regions of the atmosphere. Be this as it may, it is a most instructive and important gale; with only one exception, all the main

features resulting from the "Law of Storms" are fully confirmed; the high and cross seas in the *receding* quadrants, combined with an increase in the force of the wind in these quadrants—phenomena generally noticed—will go far perhaps to explain the anomaly before noted. It would appear, upon the whole, that the *Duke of Richmond* ran in the left-hand semicircle of the storm during the greater part of its course; and it would also appear that the gale increased in violence as it proceeded.

It may be well to remark here that our circles, indicating the size of the gale, are entirely arbitrary, and the track itself but approximative; nevertheless, it serves to add another storm-path to our collection, and that in a part of the world from which we have not yet received any records.

The diagram shows us that the course of the vessel being northward of east, was inclosed by that of the storm, which, we apprehend, recurved about 128° W. long. This idea, fully borne out by the wind and barometer, gives rise to some very important suggestions, relative to the manœuvring of a vessel when contending with a gale in these localities. It does not appear that Capt. Barclay at all attempted to manœuvre, either when he fell in or kept company with this gale. He kept on his course, dashing away while in the most favorable part of the storm, and proportionally *crippled* when in unfavorable portions. As it is our intention to offer a few remarks on Storm Sailing in high southern latitudes, it may be as well to combine, with these remarks, any that we may have occasion to make with regard to the instance before us.

Storm Sailing.

In the South Indian Ocean, off the Cape of Good Hope and also off Australia, we have the tracks of four hurricanes, south of the parallel of 40°. These were all travelling eastward, and occurred between 20° and 120° east longitude. The cyclone we have just been considering makes the fifth recorded in the higher latitudes; its occurrence, between 50° and 60° S. lat. and 110° and 165° W. long. also travelling eastward, points at a general law, so far as the storm-path is concerned, capable of being turned to good account in voyages either to Australia or homeward by Cape Horn. In the "Hand Book of the Law of Storms," we have this statement:—

"Vessels from the Cape to Australia, by keeping northward of the parallel of 40° during the winter months of the southern hemisphere, will find the cyclones of considerable benefit; for, by sailing on a course nearly parallel with the centre of the storm, and at such a distance from it on its *northern* radius as to get a steady breeze from the westward, they will make very good runs, and reach their destination with but little, if any delay."

We also find from the remarks of Capt. Erskine, given by Mr. Piddington, that the *Havannah*, in her run from the Cape to Sydney,

experienced a succession of cyclones; Capt. Erskine paid attention to the barometer, kept in the left-hand semicircle or that of westerly winds, and made the passage in comparatively moderate weather, in 34 days. Our diagram is a striking illustration of these statements; the cyclone is travelling eastward, and the *Duke of Richmond* gets the best runs while on the *northern* radius of the storm, just before its recurvature.

The point the Commander should endeavour to keep steadily in view, while sailing in these latitudes, is the running with a westerly breeze, while the cyclone is travelling eastward. As soon as he finds indications from the barometer and wind that a cyclone has *overtaken* him, which we apprehend will usually be the case, his first manœuvre will be the attainment of the *northern* radius. If he be caught in the advancing quadrant of the left-hand semicircle, he is all right; his winds are more or less from the NW., gradually hauling to W., which he should endeavour to keep as long as possible, by maintaining so high a barometer as may be consistent with good sailing. But, as in the case of the *Duke of Richmond*, it may catch him on the axis line or in the SE. quadrant, and he soon finds himself in the *right*-hand semicircle, with N. or NE. winds. In the first of these cases, he should bear away, as much as the wind will allow him, to the northward of E., cross the axis line, and get into the left-hand semicircle, as the *Duke of Richmond* did. Care, however, should always be exercised, in crossing a storm's track, lest the Commander attempt it when but at a short distance from the centre, and he be involved in the high sea that invariably prevails there.

Our diagram shows that the *Duke of Richmond* soon found the value of the left-hand semicircle; she was not long without winds veering from NW. to SW.

If the gale take a ship with NE. winds gradually veering to E., so as to be dead in her teeth, the best manœuvre is not to bear either north or south, for the sake of maintaining her course, but simply to sail round the heel of the cyclone, just carrying sail enough, and maintaining the barometer high enough, to run into the left-hand semicircle in the least possible time. The progress of the storm will favor this manœuvre, for, as it travels eastward, the barometer will rise, which must be *prevented* by the ship closely following the storm under such an amount of canvass as may enable her to get the wind she wants. By her being put before the wind when on the southern radius, wind E., especially if she be not very far from the centre, it will soon haul to SE. and S.; she then knows the storm to be east, and in advance of her, and can soon resume her course with favorable winds. The course run by the *Duke of Richmond*, between noons of the 12th and 13th, shows her to have been *crippled* by her position in the gale, which, however, she soon gets the better of in the left-hand semicircle. It is worthy of remark that she makes the best runs with the highest barometers.

The wind drawing to the southward indicates the recurvature of the storm, and shows that it has attained the same parallel as the ship. We see, on the diagram, how soon the *Duke of Richmond*

became crippled at this point. It seems best, in such a case, to "wait" on the cyclone until it has made sufficient northing to get across its wake. Capt. Barclay did not, however, experience much difficulty after the 21st; he got fresh gales from WSW. almost immediately after he lost the hurricane, which leads us to imagine it either broke up or rose in the atmosphere. As this appears to be the first decided instance of recurvature in the high southern latitudes, we cannot do better, in closing these remarks, than to solicit the attention of mariners to the closing phenomena of gales in these parts of the world. R.

THE LOG AND THE DAY'S WORK.

Glasgow, Jan. 27th, 1854.

SIR,—In the First Number of your Magazine I have read, with much interest, the article on "Meteorological Observations at Sea," which is well worthy the attention of all nautical men. Perhaps you will permit me to draw your attention to a most important point, which is now very much omitted on board our Merchant Ships.

The subject I allude to, is the neglect of keeping the log regularly hove by night and by day, at stated intervals of two hours; I have had an opportunity, for some time past, of ascertaining how very deficient many of our officers are in working up a common day's work; many of the young have freely acknowledged their ignorance of heaving a log at sea, and many of the more advanced in years hold it in utter contempt, when navigating in the Atlantic or Pacific.

Since the introduction of chronometers and lunar observations, the common log is too much neglected by a very large portion of our Shipmasters; it is only when they are caught with thick weather in Channel, or when making the land, that they have recourse to it; in short, there are ships afloat, on both long and short voyages, in which it is rarely used, unless as a fishing-line; in others, it has to be marked in the hour of extremity; and it is when surrounded by rocks and shoals, in thick weather, that the log, which was held to be useless in the open ocean, is resorted to.

I do not here advocate that a ship's position can be accurately determined by means of the log, but this I do say,—if it can be depended upon with any degree of accuracy, in a channel or when making land, in weather when neither sun, moon, nor stars appear, and surrounded by many dangers, it certainly ought to be depended upon with the same degree of accuracy in the open ocean. I hold it to be as much an officer's duty to heave the log regularly, note the leeway, and work up his day's work at noon, as it is for him to find the latitude by a meridian altitude of the sun.

But, to come more to the point, with regard to scientific observations; how is it possible for any shipmaster to furnish you, or Lieut.

Maury, with any correct data respecting currents and many other points, if they have been navigating entirely by chronometers and lunar observations.

There is no doubt there are ways of "doctoring up" a log-book, and showing the columns for knots, &c., regularly filled; but, let an accident occur on board any ship where such log-books are kept, and a sacrifice of life and property take place, so as to cause an investigation to be held by the Board of Trade, and the log-book is placed in the hands of a qualified examiner to report upon it, I am afraid that, in too many cases, the discrepancies between the position marked on the chart and that of the log-book would be very great.

There are other points worthy of notice, in our Mercantile Marine Service, before Lieut. Maury's plan can be carried out as it ought to be by such a maritime nation as Great Britain; and I have no doubt but, from the seamanshiplike manner in which you have got your good ship (the *Magazine*) under weigh, you have many of those points in view yourself, to be taken up as opportunity offers.

The log and day's work are points I have long contended for, and many an argument I have had with both Shipmasters and Shipowners about it, and I am sorry to find so many still opposed to my views. From the manner in which you have wrought out your first day's work, I do not anticipate you as an opponent; but, should you take the opposite view of the matter, we must agree to differ, although my opinion, from long experience, will remain unchanged. I do not think it is generally known among the different associations of underwriters how far this point is neglected. The establishing of a work, such as the one you have started, ought to be appreciated by all nautical men; and I do hope it will be the medium through which they can communicate their ideas.

Before bringing this to a close, I will take the liberty of giving you a quiet hint. With all due deference to our Navy, and the many excellent officers it can boast of, if you wish your Magazine to become popular with the Mercantile Marine, let it be entirely devoted to the Merchant Service, and I have no doubt but you will soon find it to be an accompaniment to the Shipowner's office, as well as the Captain and Officer's library. The Merchant Service has been too long without something of the kind to advocate its cause. If you deem the present worthy of a corner in your Magazine, I shall again send you a few fragments on some other topic connected with the Service. Wishing you every success,

I am, Sir, yours respectfully,

AMPHIBIOUS.

To the Editor of the Mercantile Marine Magazine.

OUR MERCANTILE MARINE.—No. II.

THE gales which, at the commencement of the present year, were so disastrous, both as regards the loss of life and the destruction of shipping, had scarcely ceased to expend their fury on our coasts when intelligence reached us of the loss of several outward and homeward bound vessels, carrying emigrants or passengers; immediately afterwards, to swell the long catalogue of misfortune and suffering, came the lamentable wreck of the new iron-ship *Tayleur*, not to mention other catastrophes at sea of a character sufficiently prominent to deeply engage the public mind; and in which, though happily not accompanied by the same appalling scenes which marked the destruction of the ill-fated *Tayleur*, human life was submitted to equal hazards.

Shipwreck after shipwreck, one following another so closely, naturally produced a deep sensation. Who is to blame?—and Where lies the fault? were the questions anxiously put by the public; and an examination into the circumstances, which led to the melancholy results, became imperatively necessary. The public press, at the same time, teemed with letters and animadversions on particular points to which these and similar disasters appeared to be, in the main, attributable, and which were either brought to notice through the narratives of a few of the survivors, or elicited by means of the coroner's inquest on the bodies washed ashore from the wreck of the *Tayleur*.

A few general remarks, therefore, but more especially on "the efficient manning of ships," and on the "errors of compasses" (subjects to which particular attention has been drawn), may not, at this moment, be inappropriate; at the same time, we wish it to be distinctly understood that no direct charges against any parties, or in respect to any particular vessel, is intended; least of all as regards the *Tayleur*, since the official investigation, under Capt. Walker, R.N., is still in progress.

Our first observations shall be directed to, what is termed, the *efficient* or *inefficient* manning of Merchant Ships. It is a very prevalent opinion that, for every hundred tons burden, a certain number of men and boys are required to be shipped; now no legal provisions exist to this effect, but the owner or master (?) decides how many "hands" will be required to navigate the ship, which must, necessarily, depend on the nature of the voyage, taking into consideration, at the same time, the rig of the vessel. "The notion is derived from the practice of Government, when chartering ships, requiring certain conditions as to qualification of officers, number of men for tonnage, quantity of provisions, water, &c., to be stipulated for; but these are entirely matters of contract, for there is no law—nor has there been a law—that requires ordinary merchant ships to be manned, other than that which, until lately, imposed conditions respecting the proportion of British and Foreign seamen employed:"* and, since October, 1853,

* "Shipmaster's Guide," new ed. page 66.

y 16 and 17 Vict., cap. 131, sec. 31, vessels are allowed to be navi-ated, both as regards masters and crew, without regard to the nation-ity of the parties.

We have endeavoured to ascertain the proportion of men employed . a large number of ships, engaged in the foreign trade, varying from 70 to 1,700 tons. They were not purposely selected, but taken as ey came in order on the list; and we are enabled to state that the umber of hands, including captain, mates, carpenter, steward, and ook, ranged from 6 in the smaller to 2·4 in the larger, per hundred ons. Four of these vessels were manned as follows:—

170	tons, with	4	able, and	2	ordinary seamen.
260	,,	3	,,	2	,,
700	,,	6	,,	4	,,
1,700	,,	22	,,	12	,,

There will always be a difference of opinion as to the number of ands with which a vessel can be efficiently worked. Some assert that hree able seamen and one ordinary, per hundred tons, are as few as ught to be carried; others think that less will suffice; it is, however, ertain that a small vessel requires a greater number of hands, in pro-ortion to the tonnage, than a large one; it is also no less certain hat, of two vessels of equal tonnage, one may "work" very much asier than the other.

It has been said of some owners, that their great point of consi-leration, in fitting-out and furnishing for a voyage, is not *what a hip wants, but what a ship can do without;* and this remark applies vith considerable force, to the very general neglect in adopting such nventions as have been produced, from time to time, to facilitate the vorking of the vessel. For example, in how few cases (except in lipper ships) are the patent blocks used? and, there can be no doubt, hey are especially requisite for the braces and halyards; chain-brace endants, too (so handy in overhauling the lee-braces, and allowing he yards to swing free), might be adopted with the greatest dvantage, but they are seldom seen except in American ships; nd, had not the loss of the *Tayleur* called more attention to hem, Cunningham's patent self-reefing topsails might have remained n the same comparative obscurity to which they have, heretofore, een condemned. It is very true that the outlay for the improved nethods may be something more than that in which the vessels re fitted under the old plans, but the greater safety ensured by he former far more than counterbalances the additional cost; and, wherever human life is at stake, even though it be only the sea-man's, it is of the first importance to adopt all those precautions which reduce to a minimum the chance of its being sacrificed.

We are sorry, at the same time, to record that when certain appliances, which would render the working of a ship less arduous than it is, have been introduced to the notice of captains, their reply has been:—"We are sent to sea undermanned as it is, and we should gain no advantage by the adoption of any of these facilities, for the hands would be reduced in proportion, and, as it is, they are quite as

few as a ship ought to carry under any circumstances." Otherwise, they have no disinclination to their adoption.

It cannot be questioned that quality, as well as quantity, is an essential element in efficient manning; and it would be exceedingly desirous to know that every "hand" on board is capable of undertaking the work for which he ships, whether as able or ordinary seaman—a difficulty not easily got over, particularly in the colonies, where the system of "crimps" operates in a manner most detrimental to owner, captain, and the seaman himself. It is a very common remark, that not more than three or four "good men" are to be found in a tolerably large crew; and, what is still more to be deplored, the "incapables" are insolent and lazy in proportion to their ignorance—in fact, with such men, skulking becomes a part of their business, to hide their incapacity,—and thus double labour is thrown on the shoulders of the abler seaman, whose duties the officers would rather lighten, that their services might be more available in an extremity. Acts of Parliament have been passed, bearing on every part of the Mercantile Marine, but in nothing have they been found so futile as in preserving to the Merchant Service an efficient body of seamen, among whom an alteration for the better cannot take place too early.

Another momentous point for consideration is the state in which a vessel commences the voyage. A ship, having returned to port, undergoes those repairs which are necessary to fit her for a new voyage; riggers are also employed, but for what beneficial purpose it is difficult to understand in a large number of instances, for the ship has scarcely proceeded to sea when it is discovered that the rigging has not been put out of hand as it ought to have been—nine cases out of ten, to *dab* it in its place seems all that was intended; it is expected that the sailors will work it, and put it in order—a task of no ordinary difficulty at starting, since the majority of seamen go on board in the last stages of drunkenness and dissipation, and not a few make it an invariable rule to have "the Channel fever" for a week at least. We conceive that the remedy for this state of things is easy, and quite in the hands of the owners. Instead of engaging a crew to go on board as the vessel is hauling out of dock, have them at work from four to six days previously, if not more. The ship would then be better fitted to encounter a gale in the Channel; the quality of the seamen would also be known to the officers, and few would ship for duties they could not perform. The expense to the owners would be the few days' extra pay and food—a loss, here again, more than counterbalanced by the ultimate benefits. It is utterly useless to have certificated officers, if, in the hour of danger, the men under their command are either too few in number, or worthless as regards the services they may be required to undertake.

Our limits do not permit that we should discuss, on the present occasion, the *Wrecks on our Coast*; but we cannot refrain from remarking that it would be more judicious if certain writers in the public press made themselves thoroughly acquainted with particulars, before they pass a sweeping censure; and it somewhat surprised us to see a Magazine, devoted to Naval and Marine affairs, making use of such

expressions as the following :—"Really our Mercantile Seamen appear to be distinguishing themselves in no very seamanlike way;" and again, "our Merchant Skippers are gaining a notoriety, which appears to us by no means enviable;" bringing forward, at the same time, two circumstances which had just transpired, and concerning the details of which they could not possibly know anything.

We are fully aware of the merits and demerits of our Merchant Captains. In our first-class ships they are, generally speaking, as fine a set of men in respect to ability, discretion, and gentlemanly bearing, as can be furnished by any profession; the exceptions to the rule are to be found in cases in which the owners—"a penny wise, a pound foolish"—entrust their vessels (badly found, and provisioned in a most niggardly manner) to men whose only recommendation is the small pay with which they undertake to command—men of very poor parts, but probably, by their brutality, able to keep down a mutinous, half-starved crew, and no less capable, in a fit of intemperance, when more than usually excited by a night's debauch, of squaring away the yards and deliberately running the ship on a reef, with a threat to blow out the brains of any one who offers to remonstrate. Such owners may rest assured that, if the system of small wages and bare subsistence has its advantages in present *(apparent)* gain, it has also its disadvantages; and, in the long run, if underwriters were a little more particular in instituting a searching inquiry, we feel persuaded these would outweigh the former.

We proceed, in the next place, to examine a subject that was brought forward very prominently on the loss of the *Tayleur*, viz., the error of the compasses.

It has been said, of the compasses of the *Tayleur*, "that no two agreed." This would, undoubtedly, produce alarm among those who know nothing of the nature of local attraction; but, if the Captain is aware of the amount of deviation on each point of the various compasses on board, it would be of little consequence whether they agreed or no; as, in this case, he would be just as sure of his course as if there were no local attraction to derange them. But, taking the subject generally, we fear from what we have heard and seen (and our opportunities of determining the truth have been considerable), there is both laxity and incapacity, in more quarters than one.

The Registrar-General of Seamen, who has taken considerable pains to make the complicated system of legislation, relating to the Mercantile Marine, something clearer than it would be if the parties concerned were left to ramble through the various Acts without his analysis, tells us, among the "Instructions to Surveyors of Steam Vessels," that—

"A certificate, to the effect that the compasses of all sea-going steamers have been examined and adjusted by competent persons, is to be required of the master or owner and is to be carefully examined by the shipwright surveyor, who is to satisfy himself as to the proficiency of the person whose signature is attached to the certificate; so as, in the words of the Act, sec. 3, 'to be satisfied that the compasses have been properly examined and adjusted,' more especially in iron

steam-vessels; and either the certificate, or a copy of it, with the name of the party giving the certificate, is to be sent with the declaration to the Board of Trade." *

We would ask, are these instructions fulfilled as they ought to be? and we wish to know further, why iron sailing-vessels are not included under these or similar regulations, when it is known that local attraction produces deviation of *their* compasses no less than of those of steam-vessels? This is not the place to investigate the different plans either now in use or that have been proposed, for counteracting the effect of the iron on the compass;† but we conceive that we should not be doing our duty, did we refrain from stating that a large number of the deviation cards and papers, which have fallen under our notice, have been far from satisfactory—bearing the stamp that the parties who undertook to furnish the corrections were either incompetent for the delicate task they had to perform, or strangely negligent on a matter which might peril the lives of hundreds.

We would call the attention of Captains to the following well-known facts:—that the difference between observations, made for variation, upon the weather-side of iron-ships, and of ships laden with iron, have been found to differ from similar observations made on the lee-side at the same time; and that an iron tank, on board any vessel, "would exert a magnetic influence equal to that of a solid of iron, of the same linear dimensions." Are these things (which we merely mention to show how much caution is requisite) taken into consideration as they ought to be? It is impossible to be too particular, and of this the public are daily becoming more conscious, not only from letters in the public journals but, more lately, from different articles in the popular literature of the day, from one of which we make an extract, as deserving the attention of all who have anything whatever to do with a ship:—

"Captains of ocean steamers differ considerably in their attention to exactness in compasses; but the very best compass may be rendered worse than useless, by a disregard of the petty circumstances on board that derange its action. Capt. Shannon (now of the *Europa)* related to us a curious instance of a derangement in the compass, which has since rendered him punctiliously cautious. He had left Halifax, with his vessel, on the homeward-bound voyage; it was during one of the cold winter months, when fogs prevail on the American coast. His directions at night, to the officers of the watch, were to run for a point thirty miles eastward of Newfoundland, so as to make sure of keeping clear of its rock-bound shores; and the point of the compass that would lead in this required direction was fixed upon. On coming on deck, in the grey of the morning, what was his horror on seeing that the ship had just entered a small bay, and seemed about to be dashed in pieces on the lofty precipices that revealed themselves through the mist! By instantaneously shouting orders to the man at the wheel, and by reversing the engines, he barely saved the vessel

* "Mercantile Navy List," p. 294, ed. 1853.

† This will be done in our articles on the "Mariners' Compass."

from destruction. After some trouble, it was paddled out to deep water. His first impression, of course, was that the compass had been neglected; but, to his surprise, he found that his orders in this respect had been exactly followed. The head of the vessel had been kept in the direction which, by compass, should have led to the open sea, thirty miles from land, and yet here was it running full inshore. To all concerned, the deviation seemed perfectly magical—not on any ordinary principle to be accounted for. The truth, at length, dawned on the Captain. The error must have arisen from some local derangement of the compass. He caused all the compasses in the ship to be ranged on the deck; and soon it was perceived that no two agreed. The seat of the disorder was ascertained to be at a certain spot close to the funnel of the stove of the saloon. Could this funnel be the cause? It was of brass, and had never before shown any power of distracting the needle. On looking into it, however, the Captain discovered that, when at Halifax, a new iron tube had been put inside the brass one, without his knowledge, and the circumstance had never been mentioned to him! There, in that paltry iron tube, was the whole cause of the derangement, 'which I speedily,' added Captain Shannon, 'made to shift its quarters.' How near was thus a fine vessel being wrecked, from a petty circumstance which no one could, previously, have dreamt of; and, it may be said, how many first-class steamers, assumed to be diverted towards rocks by currents, may have been led to destruction from causes equally trivial."

We are obliged to confess that the entire subject of compass-making, and their adjustment in iron-ships and steamers, requires examination, and that there are faults of omission and commission on every side. There are, however, three points on which we lay great stress, as essential to safety in the important question now under discussion:—

1. That the Captain (not necessarily the owner or builder) should look to the compasses and the adjusting of them, with as great care as he does to the chronometer or sextant.

2. That those who undertake to adjust, should perfectly understand the nature of a compass, and have acquired some knowledge of the science of Magnetism; *then*, whether they perform the duties required of them "by methods peculiarly their own," or by the plan of the "Astronomer Royal," or whether they have adjusted the compasses of 10 or 500 vessels, it may be expected that those duties will be properly executed; and here we may parenthetically remark, that the letters to Editors (which we regard as little better than puffing advertisements) betray, by the palpable absurdities contained in them, how ignorant the parties are of the very rudiments of Magnetism.

3. That full particulars of all adjusted compasses be furnished to an authority competent to detect flagrant errors, and whose business it would also be to draw up scientific reports, as occasion offers, which would greatly tend to perfect the system, by throwing additional light on the subject.

The remarks of the late Captain Johnson, R.N., have not yet lost

their force and truthfulness:—"that while it would be fallacious to assume that the greater number of wrecks are caused by errors of the compass, but that many have occurred in consequence of these, there can be no doubt;" and we may add, will continue to accumulate until more care is taken than at present, and so long as the adjustment is regarded as an £ *s.* *d.* affair, instead of a scientific process. We strongly recommend to the perusal and *study* of all the parties concerned (captains no less than compass-makers and adjusters) the following works:—

Practical Illustrations of the Necessity for ascertaining the Deviations of the Compass. By Capt. Edward J. Johnson, R.N.

The Magnetism of Ships and the Mariner's Compass. By William Walker, Commander, R.N.

Rudimentary Magnetism; Parts I., II., III. By Sir William Snow Harris, F.R.S. (Weale's Rudimentary Treatises.)

In conclusion, we cannot forbear to remark, that law after law has been passed, touching upon or presumed to embrace every department of the Mercantile Marine; and yet, no parties are satisfied—neither the public, nor owner, nor captain, nor seaman. How is this? If our opinion be held of any value, we do not hesitate to say that there is *too much law;* and that, if matters generally were allowed to take their course, and if more was left to the decision of the parties most interested, there would be greater satisfaction on all sides. Niggardly owners would soon meet the punishment they merit, by being driven out of the field of enterprise; the public would select the ships of such owners as were known to deal fairly and honorably with them; and how much better it would be for seaman and captain, it would take pages to detail—for, what with acts providing for this and for that—modifying one thing, and limiting another—acts that extend, abolish, and alter each other, and which variously affect innumerable preceding acts—they open far more loopholes than they provide against; and, instead of the present Parliament consolidating these Acts during the present Session, if it undertook to abolish one-half, at least, the benefit would be immeasurable.

M.

GREAT CIRCLE SAILING.

(Continued from page 69.)

There was, however, one objection that existed, some years since, as to the value of great circle sailing. It was said that, unless the degrees of longitude of two places be considerable, great circle sailing

sails to save much distance; and, on the other hand, when the difference of longitude is very great, this sailing cannot be adopted; and thus the method withholds its chief advantage in practice, when its value in theory is greatest: for example, in an Australian voyage we should save more distance than in any other; but, from the nature of great circle sailing, it is for that purpose impracticable, since it would lead the ship directly across the south pole.

This I found to be the most formidable obstacle, seven years ago, when I attempted to devise means of bringing great circle sailing into general use. For the purpose of removing this difficulty, I endeavoured to solve this problem:—If it be undesirable for the mariner to approach the pole, nearer than any given latitude, how can he sail by the shortest route without violating this restriction. This problem I solved by the invention of a new sailing, which I called Composite Sailing. It is the sailing made by Australian ships that have made rapid passages, and is frequently denominated great circle sailing. But I have been charged with something like presumption in laying claim to the honor of being the inventor of a sailing. This route is, however, that which in my work, before alluded to, is termed composite sailing—great circle sailing being inapplicable to such voyages. This sailing originated with myself. The name was never employed in Navigation, till the Admiralty published it in the work of which I was the author. When first my ideas of the subject were submitted to men of science, the principle on which this sailing is founded was condemned as being incorrect. For years I had to combat with those who contended that it was a fallacy; and, in demonstrating its accuracy, I received most valuable assistance from my friend Mr. Rae, who displayed much mathematical ability in establishing the truth of the principles on which composite sailing is founded.

Capt. Godfrey, of the *Constance*, first brought this sailing into successful practice in 1849, having made a voyage from Plymouth to Adelaide in seventy-seven days. He had previously tried the maximum latitude of 55°, the same now suggested by yourself, but he reports that light winds prevail* in the higher latitudes; he, therefore, preferred the maximum latitude of 51°, by which he made his then unprecedented voyage. Afterwards, in the *Statesman*, he accomplished the same voyage in seventy-six days. Since that period, M'Kay of the *Sea*, Boyce of the *Eagle*, Forbes of the *Marco Polo*, and other shipmasters out of this port, have made the voyage in still shorter periods. In fact, this sailing is now adopted in navigating the greater number of ships that leave this port for Australia; and it is found that ships make this route in about 20 per cent. shorter time than those who pursue the previously-adopted track. Capt. Forbes and Boyce simultaneously, in 1852, adopted composite sailing, with extraordinary success, in returning from Australia, as well as on the outward voyage.

In claiming for myself the honor of being the inventor of what is called composite sailing, I am anxious that I may not be the means of doing an injustice to those who, in practically carrying out the principles of composite sailing, have rendered themselves deserving of

our highest consideration. Nothing has given me more pain than occasional remarks that have fallen from some of my injudicious friends, who have spoken lightly of the talent displayed by various captains who have made splendid voyages, because they have adopted composite sailing, as if the credit were due to me and not to them, or that navigation was so simple a science that any one could accomplish one of the most stupendous voyages by means of a set of tables. Little can such persons have thought of an Australian voyage—of the skill and appliances required for the accomplishment of such a feat of art. Navigation, truly, has drawn extensively on every science, but it detracts not from the merit of the modern mariner that he has so largely availed himself of the skill of scientific men. We think not the less of the mariner because he uses the chronometer which Harrison and Arnold have brought to a practical state of excellence, nor because he uses the logarithms which Napier has invented, nor the sextant of Ramsden, nor the meridianal parts of Mercator or Wright, nor the lunar tables of Mayer. So far the reverse; that mariner who employs the greater number of the aids which science has submitted for his use is deemed the most worthy of distinction. On the other hand, I have equal cause of complaint when the accident or the errors of the navigator are laid to my charge, because he has used my tables or adopted composite sailing.

A lamentable wreck took place in June, 1849. The brig *Richard Dart*, Capt. Potter, sailed from Gravesend in April, on a voyage to New Zealand, with forty-six passengers. On the 19th of June, the ship was wrecked on the north side of Prince Edward's Island; all the crew and passengers, except ten persons, were lost, and those that escaped suffered dreadful privations. In April, 1850, there were some remarks in the "Nautical Magazine," tending to imply that this loss was the result of the adoption of composite or great circle sailing; and, in the following May, I was personally charged by the owner of the *Richard Dart* with being the cause of her loss; and an insinuation of the same class was, afterwards, made in the theatre of the Society of Arts. I am confident that the absurdity of such observations will be perceptible to all present. Who would imagine that a set of tables, compiled for the purpose of facilitating the practice of great circle sailing, would render unnecessary a good look-out, or the setting down of the ship's place and course in the chart? If the author of a sailing be chargeable with all the wrecks that occur to ships that adopt such a sailing, with how many wrecks is Wright chargeable on account of his introduction of Mercator's sailing? It was but a few days since that we received the account of the loss of the *Meridian*, on the island of Amsterdam. This island and that of St. Paul's lie on either side of the rhumb line, or the track by Mercator's sailing; and yet no one attributes this loss to the captain having adopted Mercator's sailing. Then, again, a little more than twelve months since, a Liverpool captain wrote home, to his owners, an excuse for his having made a voyage of 112 days to Australia, that it was on account of employing what he called great circle sailing, which he assured them he would never do

again. The introduction of composite sailing, so far from reducing the amount of ability required by a captain engaged in Australian voyages, makes a demand for higher qualifications, and a greater amount of judgment than were previously required.

There is another error connected with this subject, frequently propagated by men who call themselves practical men—that which we so frequently hear repeated when an extraordinary voyage is spoken of, "Have you heard of the *Eagle's* or the *Marco Polo's* rapid circumnavigation of the world?" "Yes," is the reply; "but this is not on account of the skill of their commanders, who are but men of ordinary ability, but of chance. When Capt. Godfrey made his first voyage in the *Constance*, in seventy-seven days, so prevalent was this idea, that a gentleman, whose standing is high in the nautical world, addressed me thus, in the theatre of the Society of Arts:—"No doubt Capt. Godfrey is a very clever man, and the route he took was a very good route; but do not imagine that his having made his voyage in such an incredibly short space of time as seventy-seven days resulted from these circumstances. It has occurred once, but depend on it he will never do it again." And, in order to convince me that he believed what he said, he assured me that, if Captain Godfrey ever again made the voyage in so short a time, he would send me his head. I had, however, the pleasure of calling on him to perform his promise; for Capt. Godfrey afterwards, in the *Statesman*, made the voyage in seventy-six days.

Previously to 1848, the voyages to Australia were conducted upon the same principles as at present, until the latitude of between 30° to 35° S. had been attained, and then easterly was made, as the wind would permit. Some years since it was discovered that there were frequent occurrences of a rotatory storm, and that these storms, after leaving the Cape, pass away to the southward, extending their southern edge so far as 46° or 48° S. Now since, by the well-known laws of rotatory gales in the southern hemisphere, they revolve from left to right, or in the direction of the hands of a watch, when they pass the Cape they assume the appearance of a westerly gale; but it was found that, if we were four or five degrees south of the Cape, being then on the southern edge of the gale, it was experienced as an easterly gale, and mariners were warned to avoid going further south than 37°.

When the attention of Captain Godfrey was directed to the saving of 1,000 miles of the distance, that might be effected by means of composite sailing, this idea suggested itself to his mind:—"These rotatory gales must have a limited range; and, if I can find a latitude to which they do not extend, I shall not only shorten my distance, but shall also avoid these gales altogether." This idea he fully matured in the *Constance*, and came to the conclusion that the most favorable maximum latitude is 51°—a conclusion which has been established by the fact that the ten shortest voyages out have been made on this route. By thus giving the Cape a wide berth we not only, then, save distance, but we avoid the regions of storms. On the other hand, in the latitude 51°, we have continued westerly winds, with a

heavy rolling sea from the east; and also the wind in this region seems to blow with more equal force than those winds we are accustomed to experience, except in the neighbourhood of Tristan d'Acunha and Kerguelen Land, where the steadiness of the wind appears to be interfered with by the interruption of the land.

The Persian and other vessels have been navigated in lower latitudes, on account of the health of the passengers. With the meagre data, however, of the few records of the temperature kept on board Australian ships, I should come to the conclusion that, along the belt of the westerly trades, there is no decided difference in the temperature of the air from 46° to 50° S. I acknowledge that I have means far too slender to consider such a fact as established; still it proves how important it is that the proposal of Lieutenant Maury should be carried out—that we should embrace every opportunity to collect data respecting the temperature of the air in these regions, otherwise the humane motives of Capt. Peat and others, who sacrificed time for the benefit of their passengers, so far from accomplishing the object they have in view, may produce the contrary result, by exposing them to a longer passage.

The composite route home is not so fully established, in its details, as that by which the voyage out has been conducted. Till of late, indeed, all our sailing directions advised the mariners to return by the Cape; the voyage home, as far as the Cape, being over the same track as the voyage out. We have shown that the great advantage of ships sailing by the composite route to Australia arises from favorable winds. About a thousand miles, or seven per cent. of the distance is saved; but twenty per cent. of the time of the voyage is saved; consequently, thirteen per cent. is saved by favorable winds. In fact, so constant are the winds over this route, that a steamer has only occasion to use that auxiliary power during one-fifth of the passage. How then could it be expected that vessels could make a good passage, by returning by such a route?

The first passage made by the composite route home by the Horn, which has come to my knowledge, was made by Capt. Boyce, in the *Pakenham*, in which case he left Australia, striking into the parallel of the Horn, weathering the Horn by this parallel. You are all acquainted with his subsequent return voyages, by the *Eagle;* also, the two voyages by Capt. Forbes, in the *Marco Polo*.

From the imperfect data we possess, I believe that the circle of westerly trades of the southern hemisphere revolves, not around the south pole as a centre, but around a point situated on the 30th parallel, where it intersects the 40th degree of east longitude; and it also appears that the centre of the isothermal lines has the same centre. The mariner, therefore, in returning by the Horn, chooses a higher latitude than on his voyage out. The consequence of this is, that ships, on their return, make a greater southing than on their outward voyage.

In the first voyage home of the *Marco Polo*, I was struck, in examining her chart and log, with the great amount of nautical skill displayed by her Commander, especially in that part of her route

which extended from 100° W. to the south-east trades. In this part of her route, if a line could have been stretched over the surface of the earth, I do not believe the *Marco Polo* deviated five miles from the line in a run of 3,000 miles; and this feat of seamanship and navigation was accomplished under circumstances requiring every attention, and an extraordinary amount of skill. We have no variation charts for these latitudes, and the variation changes rapidly; and, consequently, the mariner must be constantly observing to correct his compass.

We have already observed that, near the Cape, there are frequent rotatory storms met with. The same is the case with the Horn; but this difference exists—that there is, beyond the regions of the Cape storms, a track of ocean at which steady winds prevail. Not so with the Horn. Graham's Land is so near to the Horn that, when a rotatory gale blows in this region, it extends from shore to shore. Capt. Forbes, knowing such to be the case, and also that a westerly current set near the Horn, sighted land; and, availing himself of the northern side of the centre of the gale, had the combined aid of the wind and current,

Although this remarkable voyage was so worthy of commendation, the last voyage home, which so much disappointed the friends of Capt. Forbes, was that which raised him far higher in my esteem than anything he had previously accomplished. We ought not to appreciate always the amount of ability displayed by a mariner, by the shortness of the time occupied by his voyage, except we take into consideration the circumstances under which such voyage was accomplished. In their first voyage from Australia, Captains Boyce and Forbes (in the *Eagle* and *Marco Polo*) had the advantage of an Austral summer; in the last, they had to contend with an Austral winter.

In June last, we find at Melbourne four Captains, whose ability stood the highest for accomplishing a homeward voyage—Captains Boyce, of the *Eagle;* M'Kay, of the *Sea;* Coleman, of the *Kent;* and Forbes, of the *Marco Polo*. With the month of June, south-east winds set in—a circumstance which might be regarded as the most unfavorable for a homeward voyage. According to the chart, this appeared to be a head wind—the most unfavorable that could blow. First, started the *Sea:* from Melbourne to Wilson's Promontory there is a series of headlands, running out southward; nearing too closely one of these headlands, Capt. M'Kay lost his ship and his life. Then next started the *Kent*, Capt. Coleman; and, in giving an account of his run against the *Marco Polo*, I shall take his own letter in the "Times" as my authority. He succeeded in getting out of Bass's Straits five days before the *Marco Polo*. Then the *Marco Polo* started, south-east winds still prevailing. Capt. Forbes was well acquainted with the surface of the globe he had to navigate; he perceived that the port-tack was that which would lead him more directly to his port than the starboard-tack, and he ran out, therefore, at the western entrance of Bass's Straits. Now, if we refer to the chart as our guide, with a south-east wind, the starboard-tack is that which appears to lead to Cape Horn, and the port-tack appears to lead in an opposite direction. But, on referring to the globe, we find that the reverse is

the fact; the port-tack takes us towards the Horn, whilst the starboard-tack takes the ship further from that Cape. Capt. Coleman acknowledges that the *Kent*, which on the 5th June had left Melbourne, was seen astern of the *Marco Polo*, which had left Melbourne on the 10th of June, at seven a.m. of the 26th June; "but it is equally true that, before ten a.m., the *Marco Polo* was astern of the *Kent;* and that the *Kent*, with a foul wind from the north-east, walked out dead to windward of the *Marco Polo*, and, at eight a.m. on the following morning, the *Marco Polo* was eight miles dead to leeward, bearing south-east with the wind at north." If Capt. Forbes were to conduct a hundred voyages, he could never receive a higher testimony in favor of his nautical skill. By setting at defiance old conventional rules, by losing sight of the distorted figure of the earth as represented on the chart, he cut off the *Kent* which had started five days before—a ship which Capt. Coleman's testimony proves to be a far better sailing vessel than the *Marco Polo*, and commanded, too, by a captain of high nautical skill; in fact, the unfavorable account he gives of himself, in this letter, is the only disparagement that can be adduced against the ability of Capt. Coleman. He tells us that, with the wind north-east, the *Kent* walked out dead to windward. For what purpose? If to prove the weatherly qualities of the *Kent*, he may have accomplished his object; but, if he imagines that he neared his port by such a course, he has much to learn before he will win the race against some of our Liverpool captains, although he may command a ship of superior sailing qualities. The *Marco Polo*, however, the next morning, was found dead to leeward of the *Kent*, the very situation she ought to be in. It appears that the *Marco Polo* had, after sailing south and west for some hundreds of miles, found the wind from the northward; she then takes the great-circle track, which leads to 60° S., and sails on this parallel with fine westerly winds, until, in 141° W., she is stopped by ice close packed, and is obliged to beat to northward to clear this ice. Notwithstanding this untoward circumstance, which prolonged the time of her voyage four or five days, she still had cut off the *Kent*, which had started five days before her. Having thus run to northward and cleared the ice, she again ran away to the southward, first to shorten her route, and next to obtain more favorable winds, and, by her old route, weathered the Horn, when again the *Marco Polo* is found a-head of the *Kent;* but, to use words of Capt. Coleman, "neither did, on that occasion, the flying ship have any advantage over the *Kent*, but the reverse." The *Kent* was telegraphed in the Downs one day before the *Marco Polo* was sighted from Holyhead—the distance to the Downs being 165 miles or thereabouts greater than to Holyhead.

This is one example of the great value to be attached to a skilful commander, for conducting composite sailing. If we judge from Capt. Coleman's account, the *Kent* is a ship that should have made the voyage from Australia in ten days less than the *Marco Polo;* instead of which, allowing one day for the difference of distance of the Downs and Holyhead, still the *Marco Polo* accomplished the run in three days less time.

When first the Admiralty did me the honor to publish my tables, I anticipated a greater amount of improvement from its application to what I denominated windward great-circle sailing, than from any other of its practical uses.

The rule for windward great-circle sailing is as follows:—Ascertain the great-circle course, and put the ship on that tack which is the nearest to the great-circle course.

We can give no better illustration of an extreme case of this application of great-circle sailing than that already given, of the *Marco Polo* leaving Melbourne. Had that ship stood on the port-tack 1,000 miles, she would have neared the Horn 700 miles; whereas, if the *Kent* had stood 1,000 miles on the starboard-tack, she would have been 200 miles further off from the Horn than when she started, although by the chart the reverse appears to be the case.

In a New York voyage, if head winds prevailed, I proved, seven years since, that three days might be saved; and yet I have no reason to believe that, in such voyages, it has ever been adopted, except by Capt. Reed, of the *Iowa*, in a late voyage. The success of this one trial was quite equal to that which I had anticipated.

Till within a few months, the principles we have explained, and which have been employed with such signal success by sailing-vessels, have been totally rejected in navigating steamers to Australia. I had promised to this Society a paper on the best route for steamers to and from Australia, but now it is unnecessary; the *Argo* has solved the problem, and I hope that, in a few weeks, news from the *Great Britain* will confirm it. Up to within twelve months, steam to Australia might be regarded as a failure; that is, sailing-vessels having made the direct passage in less time than steamers, we could not regard steam as a successful experiment. The causes I consider to be, first, that the commanders have been bound down, by contracts entered into by the directors of the company to which their ships belong, to land mails or passengers at intermediate places which, on the chart, appear on the route to Australia; whilst, if they had consulted the winds and the globe, they would have perceived such intermediate stations undesirable: and, secondly, that the previous experience of those in command of ocean steamers had led to a system of practice unsuitable to the management of steamers bound to and from Australia.

(To be continued.)

HONORARY REWARDS.

Distribution of Rewards to the San Francisco Rescuers—Philadelphia, Feb. 2.—The Committee of Distribution of the *San Francisco* Rescuers' Fund met yesterday, and decided on the following disposal of the fund, viz.:—to Capt. Creighton, 2,000 dollars; to Capt. Lowe, of the barque *Kilby*, and Capt. Stouffer, of the *Antarctic*, 1,000

dollars each; to Capt. PENDLETON, of the *Henry Thompson*, 250 dollars; to Capt. MATTHEWS, of the *City of New York (s)*, 500 dollars and a service of plate; to Lieut. MURRAY, 500 dollars. The balance is distributed among the officers and crews of the three rescuing ships. The whole amount collected was 10,000 dollars. Captains Creighton and Lowe were received by a Committee of the Town Meeting, at the Girard House, this evening, and addressed by John O. Montgomery, who eloquently thanked them for their noble conduct. They were publicly received in Independence Hall to-day, when the testimonials were presented in a very complimentary speech by the Mayor, Mr. Gilpin.

The "New York Herald," at the time of the arrival of the *Three Bells* off the Battery, referring to the noble and humane conduct of Capt. Creighton in rendering all the assistance in his power to the unfortunate passengers of the *San Francisco*, says,—"The following modest report is from the log of her Captain:—'British ship *Three Bells*, (of Glasgow,) Creighton, Glasgow 45 days, with merchandise and 16 passengers, to M'Donald and Co. Dec. 31, lat. 40° 12′, long. 59° 30′, spoke the steam ship *San Francisco*, of New York, Captain Watkins, hence for San Francisco, haviug on board United States troops. The *San Francisco* being in a disabled condition, having had decks swept, &c., and wanting assistance, concluded to lay by her, which we did for six days, and succeeded in getting on board two hundred and thirty of her passengers, and brought them to this port.' This is, we repeat, a modest report; but Capt. Creighton has not told all. Those from the lost ship say that the *Three Bells* was leaking all the time; had to keep her pumps going constantly; that the ship had lost her sails, and was short of water and provisions. But in this last item, the *Kilby*, the *Three Bells*, and the *Antarctic* were plentifully supplied from the abundant stores of the wreck, or they could not have carried off so many passengers with any other prospect than immediate starvation. To the Captains and Crews of the three relieving ships, though they simply discharged their duty in the premises, something more than ordinary credit is due; for the case was an extraordinary one in the labours and hazards of the rescue. Our government, as an act of reciprocity and of sound policy, should approve the gallant conduct of the relieving parties, and especially of that genuine Jack tar and his Crew of the British ship *Three Bells*."

Lieut. WINDER, one of the passengers in the *San Francisco*, says:—"I cannot accord too much praise to Capt. Creighton and his officers for their bravery and uniform kindness to us unfortunates. They are indeed our saviours, and nothing can possibly repay them for their self-sacrificing humanity, save the warm glow of satisfaction that necessarily accompanies conduct so eminently humane and philanthropic. When we arrived in port we had just half a day's allowance of water, and the continuance of yesterday's fog would have placed us in a desperate situation. For several days previous we were put upon short allowance of water, so that you see we escaped one peril, but came near suffering another not much less appalling."

CERTIFICATES CANCELLED.

(The Investigations are instituted under the 28th section of the Mercantile Marine Act.)

Liverpool.—Charges of gross and repeated acts of drunkenness having been preferred against James Thomson Fish, late mate, and afterwards acting master of the brig *Ceylon*, the Local Marine Board of Liverpool having found him guilty of the above charges, the Board of Trade have, upon consideration of the report and evidence, directed that his certificate as mate shall be cancelled.

Bristol.—Charges of gross and repeated acts of drunkenness having been preferred against William Lovelass, late master of the *Pathfinder*, the Bristol Local Marine Board, having found him guilty of the above charges, the Board of Trade have determined to cancel his certificate.

Charges of gross and repeated acts of drunkenness having been preferred against John Edward Pounsbery, late master of the *Mohawk*, the Local Marine Board of Bristol having found him guilty of the above charges, the Board of Trade have determined to cancel his certificate.

LEGAL DECISIONS.

Admiralty Court.—*The Louise.—Collision.*—This was an action brought by the brig *Elswick* against the brig *Louise*, to obtain compensation for the loss resulting from a collision between them at 10·30 p.m. on the 15th of October last, off Whitby; the *Elswick* was bound from Shields for London; the *Louise* was proceeding from London for Newcastle. Both vessels alleged that they were close-hauled. The principal points in dispute were the state of the night and the quarter from which the wind blew. The *Elswick* asserted that the night was so light that vessels could be seen two miles distant, and that the wind was S.W.; whereas the *Louise* pleaded that the night was so thick and hazy that vessels could only be seen at a distance of 30 or 40 fathoms, and the wind was W.S.W. The elder brethren were of opinion that the blame rested on the *Louise for not having had a better look out*, and for starboarding her helm. Judgment accordingly.

Damages for Ill Treatment of a Passenger.—A suit which was instituted in the Fourth District Court at New Orleans, on the 4th of February, 1853, by one Ferdinand Black against Capt. Bannerman, of the British ship *Imperial*, for 2,800 dollars damages, was terminated on the 12th inst., and the jury awarded the plaintiff the damages sued for. He alleged that, on the trip from Liverpool, the captain of the ship treated him, and suffered him to be treated by the crew and passengers, with great harshness during the voyage; that he was stripped of his clothing, assaulted and beaten by the captain; his trunk was broken open and robbed; he was ducked by the sailors and turned out of the cabin; and finally, instead of being landed in New Orleans, the port for which the vessel was cleared, he was put on shore at Mobile.—*New York Journal of Commerce, Jan.* 20.

Sickness of Crew at Demerara: Caution to Captains.—Several Commanders of ships have been fined, at Demerara, for neglecting to send their men to the hospital within twelve hours after their complaining of being unwell. The Colonial law i very imperative on this subject, and it is enforced with great severity, particularly since the prevalence of yellow fever in the shipping there. The several parties accused were each fined from ten to twenty dollars. It is a heavy penalty; but we hope that Captains of vessels going to the colony will not neglect so important a duty.—*Shipping and Mercantile Gazette.*

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from Jan. 27, 1854, *to Feb.* 24, 1854.

Beacon on Island of Soröe, Norway.—At the NE. point of the Island of Soröe, called Riodvigfield, at the entrance of the passage, or in sailing to Hammerfest in Fiamark, a Beacon has been erected, 25 feet English broad at the base, and 35 feet high, of which the last 13 feet is stepped off.

The Beacon is dark-colored, and presents its broadest face to the NW. (true.) Long. 23° 21′½ E. from Greenwich; Lat. 70° 52′ N. The base of the Beacon, above mean-water level, 977 feet English, and visible 16 miles.

Lights in the Cattegat.—The Light Ships in the Drogden and Lœssoe Channels of the Cattegat were removed from their positions, respectively, on the 3rd and 4th January, in consequence of the ice.

Boulmer Rocks.—With the object of enabling vessels to avoid the Boulmer Rocks, which lie in a northerly direction from the Coquet Island, the light thereon will, on or about the 16th of February, be colored Red in that direction; and Masters of Vessels and others are to observe that the Line of Red Light will lead about one-half mile to the eastward of the Boulmer Bush Shoal.

Light in the Bight of Piave, Coast of Venice, Adriatic Sea.—It has been officially notified that, on the 21st of January, a Fixed Light was established on the eastern point of the entrance of the Sile branch of the River Piave, known formerly as Port Jesolo, but now called the Port Piave-Vecchia (Old Piave) about 11 miles east of Venice.

It stands in 45° 28′ 50″ N., and 12° 35′ 30″ E. of Greenwich, and, being 109 feet above the sea, will be visible, in clear weather, at the distance of 14 miles.

United States of America.—1. *Light on West End of Ship Island (Mississippi).*—After the 25th of December, 1853, a Fixed White Light will be exhibited from the Light-house Tower recently erected on the west end of Ship Island (Gulf of Mexico.) Elevation of the light 52 feet above the level of the sea, and visible about 13 nautical miles. Approximate position—

Lat. 30° 12′ 55″ North.
Long. 88° 57′ 01″ West of Greenwich.

U.S.—2. *Light on Bear Island (Maine.)*—A Fixed White Light will be exhibited from the 6th of February, 1854, from sunset to sunrise, in the Lighthouse recently rebuilt to supply the place of the one destroyed by fire last December, on the south-west point of Bear Island (which is one of the northern-most of the Cranberry Islands, and south of Mount Desert Island.) It is intended to serve as a guide to vessels entering Cranberry Island, North-east and South-west Harbours, and will illuminate ¾ of the arc of the horizon. The tower is constructed of red brick; the roof of the lantern is black; the centre of the lantern is 24 feet above the ground, and the base of the tower 83 feet above ordinary high-water mark, visible about 15½ nautical, or 18 statute miles. Approximate position—

Lat. 44° 17′ 00″ North.
Long. 68° 17′ 30″ West from Greenwich.

The following magnetic bearings have been taken from the Lighthouse:—

To Baker's Island Lighthouse, SE. by S., distance 5½ miles.
Monument on Bunker's Dry Ledge, E. by S. ½ S., distance 2½ miles.
Granite Ledge (8 feet at low water,) E. ½ S., distance 1 mile.
Outer end of Long Ledge, SW. ¾ S., distance 4½ miles.
NW. Point of Cranberry Island, S. by W. ½ W., distance 4 miles.
Flynn's Ledge, SW. by S., distance 3 miles.

U.S.—3. *Light on Heron Neck (Penobscot Bay, Maine.)*—A Fixed Red Light will be exhibited from the 6th February, 1854, from sunset to sunrise, in the Lighthouse recently erected on the South Point of Green Island (the southernmost of the Fox Islands in Penobscot Bay.) It is intended to serve as a guide to vessels in entering Carver's Harbour and Hurricane Sound, illuminating ¾ of the arc of the horizon. The tower is constructed of red brick; and its base is 68 feet above ordinary high-water mark. The light should be visible at a distance of 15 nautical, or 17 statute miles. The roof of the lantern is black. Approximate position—

Lat. 44° 01′ 00″ North.
Long. 68° 51′ 30″ West from Greenwich.

The following magnetic bearings have been taken from the Lighthouse, viz:—

To the East end of Seal Island, S. by E. ¾ E, distance 13 miles.
West end of Wooden Ball Rock, S. ¾ W., distance 12 miles.
Bay Ledge (3 feet at low water), S. by W. ¾ W., distance 3½ miles.
Martinicus Rock Lights, S. by W. ¼ W., distance 15 miles.
Heron Neck Ledge (dry), S. by W., distance ⅛ mile.
West end of Martinicus Island, SSW. ¼ W., distance 11 miles.
Hurricane or Deadman's Ledge (covered at high water), W. by S., distance ½ mile.
Saddleback Lighthouse, E. by S., distance 7 miles.

The whole distance from Heron Neck Ledge to Otter Island, Brimstone Island, and Saddleback Light, is full of sunken ledges.

U.S.—4. *Proposed Changes of Lights at Cape Hatteras, Body's Island, aud Ocracoke (Coast of North Carolina.)*—During this month, (December, 1853,) a temporary light will be placed outside of the Lighthouse Tower at Cape Hatteras, about 10 feet below the present lantern (100 feet above the level of the sea) equal in power and brilliancy to the light now exhibited at that point. The present light will be extinguished at the time of lighting the temporary light, for the purpose of elevating the tower. During the month of March, 1854, a Flashing White Light will be exhibited from the Cape Hatteras Tower, elevation of about 150 feet above the level of the sea, visible about 18½ nautical miles. In every 20 seconds of time there will be an eclipse of 12 seconds' duration, followed by a brilliant flash of 8 seconds' duration—or in the same proportion, in every 15 seconds of time, there will be an eclipse of 9 seconds' duration, followed by a brilliant flash of 6 seconds' duration. Approximate position of the Cape Hatteras Lighthouse—

Lat. 35° 15′ 11″ North.
Long. 75° 30′ 33″ West from Greenwich.

Body's Island Light.—Simultaneously with the exhibition of the flashing light from the Cape Hatteras Tower, the revolving light at Body's Island, about 32 nautical miles to the northward of Cape Hatteras, will be changed to a Fixed White Light, varied by alternate Red and White Flashes; height 50 feet above the level of the sea, visible about 12 nautical miles. Approximate position of Body's Island Light—

Lat. 35° 47′ 20″.5 North.
Long. 75° 31′ 20″ West from Greenwich.

Ocracoke Light.—At the same time the present revolving light at Ocracoke, about 23½ nautical miles to the southward and westward of Cape Hatteras Lighthouse, will be changed to a Fixed White Light, 75 feet above the level of the sea, visible about 13½ nautical miles. Approximate position of Ocracoke Lighthouse—

Lat. 35° 06′ 31″.6 N.
Long. 75° 58′ 27″.4 W. from Greenwich.

A more minute and detailed description of these towers, buildings, appearance by day, and the characteristic distinctions of the Lights, will be published hereafter, and the precise day upon which these changes will be made, will be stated.

A dangerous shoal, with only 9 feet water upon it at low tide, with the Cape Hatteras Lighthouse bearing N. 37° W. (true) distant 8½ nautical miles, lies off this point, and mariners should be careful not to run their vessels, in bad weather and especially at night, into less than fifteen fathoms approaching from the northward and eastward, and twelve to eleven fathoms approaching from the southward and westward.

NAUTICAL MEMORANDA.

Rock at the Entrance of Port Philip.—Capt. Taitt, of the *Hurricane*, reports that, just prior to his sailing, the Harbour-master of Port Philip handed him the following notice, the result of a survey of a rock :—Position of a rock, with 11 feet water over it at low water, in the entrance of Port Philip, Upper Lighthouse N. 21° E., Dry Rock off Point Nepean E., Flagstaff, Point Lonsdale, N. 76° W. by compass.

Shoal near Labuan.—Commander Bate, of Her Majesty's surveying-sloop *Royalist*, who was directed to examine it, states :—

"It is a narrow ridge of sandstone formation, about 40 feet in length, with 17 feet at low water spring-tides on it, and is surrounded by a bank of sand and coral from two to three cables in extent, having an average depth of 5 fathoms, with 10 to 12 fathoms immediately off it.

"The following *true* bearings place you on it :—

"NW. highest part of Pulo Tigu, N. 84° E. Nosong Point, S. 73° 30′ E., distance 15 miles. Mount Nosong, S. 68° 30′ E. Highest part of Labuan, S. 18° 40′ W.

"The above bearings, when laid down on the Admiralty chart, place the rock in lat. 5° 41′ 50″ N., long. 115° 17′ 25″ E."

Venice.—Regarding the new Lighthouse on the Punta or Sacca di Piave, lighted on the 21st Jan. last, the charge or tariff has been fixed as follows :—

Foreign ships (not Austrian), arriving from ports beyond the Gulf of Venice, will pay for tax of Lighthouse :—From 16 to 50 tons, Austrian register, 10 cents per ton ($\frac{9}{12}$d.); from 51 to 100 tons, 20 cents (1¾d.); 101 tons and upwards, 30 cents (2½d).

Should the ships arrive at Venice from Trieste, and *vice versa*, the tax will be :—From 16 to 50 tons, Austrian register, ¾ of kreutzer per ton (¼d); from 51 to 100 tons, 1¼ of kreutzer ($\frac{7}{12}$d); 101 tons and upwards, 2 kreutzers ($\frac{5}{6}$d).

Tonnage Dues at Acapulco.—Her Majesty's Consul at Acapulco reports, that the Supreme Government have made the following reduc-

tion in the Tonnage Dues upon all vessels arriving at that port laden with coal, and consigned to any steam-boat company having a depôt of coals in the harbour—viz., 4 reals, or 2s. per ton, instead of 1 dollar 4 reals, or 6s., as formerly.

Commerce of Isla del Carmen.—Decree of His Excellency the President of the Mexican Republic, Dec. 10th, 1853.

Art. 1. The port of the Isla del Carmen, in the territory bearing the same name, is open to foreign commerce.

Art. 2. The merchandise which, by virtue of this decree, is imported by the said port cannot be introduced to any other port of the republic, but must necessarily be consumed in the said territory,

Art. 3. The tariff to be observed, at the said port, is the general tariff of the republic of 1st June of the present year, and posterior amendments.

Art. 4. Foreign ships, after having legally unloaded in any port of the republic, may go to the Isla del Carmen to load logwood, subject always to the visits of the Port Captain, and other requisite formalities observed in like cases.

[Under these circumstances no tonnage dues will be exacted.]

Art. 5. Ships that arrive at the said port from foreign ports, in ballast, to load logwood, must be provided with the necessary consular certificate, and will pay tonnage dues.

Documents with which Captains should be furnished, from Port of Shipment, to avoid delay at Elsinore.—Two Sets of Bills of Lading.—When bound to Russia, and whenever the same contain any marks or numbers in the margin, the Master of the vessel should sign his name under the same, as well as in the usual place.

From the Uuited States of America.—Bill of Registry, Manifest, and Bills of Lading.—When laden with cotton for Russia, the Master should be supplied with a certificate, authenticated by the Danish Consul, setting forth that such cotton is the growth of the United States; or, if it be Brazilian or other cotton, it should be stated that it has been duly landed in a port of the United States, and not shipped direct from a vessel from a foreign port.

From the Island of Cuba.—Bill of Registry, Manifest, Custom-house Passports, Bills of Lading, and, whenever a clean Bill of Health can be obtained from the Danish Consul, such should be taken.

From any port in Europe, laden with cotton for Russia.—A certificate, duly authenticated before the Danish Consul, stating that such cotton is not the growth of Egypt or of the Levant, and has undergone quarantine, according to the rules of the place of shipment. If not supplied with such a certificate, a vessel would be liable to quarantine, and, in some cases, have her entire cargo discharged; besides said certificate are required, in all cases, Bill of Registry, Manifest, Cocket, and Bills of Lading; from France, Holland, Belgium,

Portugal, and Hamburg, also outward clearances; from Holland and Belgium further Prussian consular certificate, when a vessel is bound to Prussia.

A vessel in ballast should be provided with a document from the Custom-house at the place from which she departed, stating the name of the port she belongs to, as also that she is in ballast; if the word "ballast" be left out, the vessel is liable to a fine.

Sailing Directions for Carver's Harbour and Hurricane Sound, Maine, U.S.—The Lighthouse, recently erected on Heron Neck, having been lighted on the 6th February, the following directions, furnished by Capt. R. King Porter, for Carver's Harbour (a safe anchorage for vessels drawing ten feet of water, and about two miles from Heron Neck Lighthouse) and for Hurricane Sound (which is formed by Green's Island—on which the Lighthouse stands—on the east, and a range of islands and ledges on the west side, a safe roadstead for vessels of any class), will be found useful to mariners.

For Carver's Harbour.—Bring the light to bear NE. and run for it. Deep water within a ship's length of the rocks. Half-a-mile from the light you will pass to the eastward of Deadman's Ledge (the Eastern Hurricane Ledge), dry at low water. One-fourth of a mile S. by W. from the light lies Heron Neck Ledge, always above water. Pass between the light and the ledge (a narrow but deep channel), and you will open Deep Cave on Green's Island; keep on in an easterly direction, giving the different points of Green's Island a berth of a cable's length. When up with the SE. point, you will be near a dry ledge, one-eighth of a mile from the point—leave it on the starboard-hand. Carver's Harbour will then be in sight, and may be known by the houses around the Harbour bearing NE. by N. distant one mile. Give the east point of Green's Island, opposite the first house, a small berth and run for the harbour, leaving some dry ledges on the starboard-hand. Keep nearest the starboard shore, at the entrance of the harbour, to avoid some sunken ledges on the opposite side. Anchor in the middle of the harbour, in ten feet water at low tide, soft bottom, good holding ground, and good anchorage.

For Hurricane Sound.—Bring Heron Neck Light to bear NE. and run for it; when half-a-mile from the light, you will pass Deadman's Ledge, which you will leave on your port-hand, and, when midway between the ledge and the light, you will be in the entrance to Hurricane Sound, which runs in a northerly direction. Keep midway between Green's Island on the east, and the islands and ledges on the west side, and when about a mile-and-a-half above the entrance you will be near a dry rock; pass to the eastward of it, and anchor when you have room to give the rock a good berth.

There is anchorage all the way up the Sound, but the water is deep until you get above the rock.

NAUTICAL NOTES.

The Red Jacket (Clipper), from New York to Liverpool.—Some doubts having been expressed, as to the performance of this fine clipper ship, on her first voyage—the fastest on record—Capt. A. Eldridge, who commanded her, has furnished the following abstract from the log:—Left New York, Jan. 10th, at 7 o'clock, a.m.

Jan.	Lat.	Long.	Dis.	Wind.	Course.	Remarks.
11	40° 33′	71° 45′	103	S. by E. ...	E. ½ N.	Rainy, unpleasant weather.
12	41 03	68 30	150	Ditto.........	E. by S. ...	Rain, hail and snow.
13	42 19	62 41	265	SSE..........	E. by N. ½ N.,	Ditto.
14	44 25	58 20	232	SE. by E....	NE. by E....	Ditto.
15	46 35	54 15	210	Ditto.........	NE. ½ E. ...	Rain.
16	46 13	51 52	106	SSE..........	E. by S.......	Snowy and hailing.
17	45 55	49 03	119	Ditto.........	E. ¾ S.	Ditto.
18	50 39	47 00	300	E. by S. ...	N. by E. ½ E.,	Ditto.
19	51 58	35 55	417	W. by S. ½ S.,	E. by N......	Ditto, terrific gale, and high sea.
20	50 39	27 00	364	Ditto.........	E. by S. ¼ S.,	Ditto, and gale.
21	49 27	18 35	342	Ditto.........	E. by S.......	Ditto, fresh gales.
22	51 07	11 21	300	WSW.	E. by N. ½ N.,	Snow, strong wind, and heavy squalls.
23	53 27	4 11	360	S.	Up Channel,	Ditto, and squally. dirty weather.

Performance of the Peninsular and Oriental Company's Screw-steamer, Himalaya.—The *Himalaya*, although she experienced most adverse and unfavorable weather throughout the voyage, has made the quickest run to and from Alexandria on record. A synopsis of the voyage, which, as the first performance of this splendid Steamship, has been looked forward to with much anxiety, will doubtless prove generally interesting.

The *Himalaya* left Southampton, on her first voyage, on the 20th of January, with the usual India and China mails. She took her departure at the usual hour, viz., 3 p.m., and steamed down to the Needles by 4.45, when the pilot left her. Passing through the Needles she at once encountered a heavy gale of wind, which continued with increasing violence down Channel and across the Bay of Biscay, to a distance of 590 miles. By the time she reached Finisterre, all on board were perfectly convinced of her admirable sea-going qualities, her ease in a heavy seaway, and also of the speed at which she rushed through the unbending elements—seldom going less than 9½ and 10 knots, and never less than 8½.

After getting round Cape Finisterre, she fell in with the usual northerly winds and was enabled to set her square canvas, viz., three topsails (single-reefed), fore-course, and her three fore-and-aft sails. This was the first time her rate under canvas and steam was tried, and it was most satisfactory to find her bowling away at 14 and 15½ knots, which speed she maintained during the continuance of the fair wind.

At Gibraltar she was detained twelve hours, for the purpose of adjusting a bearing in her engines. Leaving the Rock she met with a hard "Levanter," or east wind, for the first day, against which she steamed 10½ and 11 knots. Passing Cape de Gatt the breeze fell lighter, and away she went her usual steaming pace, viz., 13½ to 14 knots; but, on the third day, a fresh north-west breeze sprang up, enabling her to carry all plain sail; and, during the next 24 hours, she ran by observation 345 miles, equal to 390 statute miles, and carried this breeze into Malta Harbour—running from Galita 300 miles in 20 hours, equal to 15 knots per hour; and having accomplished the run from Gibraltar to Malta, 1,000 miles, in 77 hours, giving an average of 13 knots per hour. She remained in Malta 12 hours, and got away at 1.30 a.m., on the 31st of January, carrying with her a fresh north-west breeze, which lasted to Alexandria, 840 miles; in 60 hours from passing the light at Valetta, she made the lighthouse at Alexandria; and, in an hour more, slackened her engines for a pilot, having run the distance in 61 hours, giving an average of 13¾ knots or 15⅞ statute miles per hour, at 8 p.m. on the 1st of Feb., when the log was hove.

After remaining at Alexandria for the mails and passengers, from Australia, India, and China, she got away at 5 p.m., on the 4th of February, and met with nothing but head-winds all the way to Malta, against which she steamed at 12¼ knots, performing the run to Malta in 68 hours. Leaving that port for Gibraltar, at 9 p.m. on the 7th, after coming well up to Pantellaria against a fresh westerly breeze, she encountered for 40 hours a heavy north-west gale, with a most confused and heavy-rolling sea, running through which she made very good way, never going less than 6½ to 7 knots, but losing by it for her passage home at least 16 hours. After the gale subsided, a light breeze sprang up from the north-east, and the water becoming tolerably smooth, she made her best day's run, having gone by observation, from noon of the 10th to noon of the 11th, 347 knots, or 400 statute miles in 24 hours. Her run from Malta to Gibraltar, against this bad weather, was 96 hours, giving 10¼ knots average speed.

Leaving Gibraltar at a quarter to one a.m. of the 12th, she brought a Levanter through the Straits and as far as Cape St. Vincent, 197 miles, which she passed at a quarter to 3 p.m. of the same day. Off the coast of Portugal, after rounding the Cape, she met with northerly and north-east winds, but not very strong, steaming against them 13 knots, until about abreast of Oporto, when it commenced blowing from the NE. After rounding Finisterre, it was blowing a furious gale, with a tremendous sea running; this lasted 30 hours.

On the 15th, it continued blowing with considerable force all across the Bay and up Channel, so that, out of 8½ days' run from Malta, for 70 hours it blew a hard gale. She arrived at Southampton at 3 p.m. 16th.

In the run from Gibraltar to Southampton, a very good comparison was afforded between the relative merits of Screws and Paddles. The *Euxine* left 25 hours before the *Himalaya*, and was passed by that ship to the westward of Portland, having, up to that point, beaten her a little more than one-fourth in speed. The *Euxine* is 1,200 tons' and 400 horse-powe, while her competitor, the *Himalaya*, has a power of only 700 horses to 3,560 tons' burden.

Lifeboats.—A trial of a new lifeboat took place on 14th February, in the Canal, at Limehouse, in the presence of several experienced gentlemen in the construction and management of lifeboats. The boat in question was designed by Mr. J. PEAKE, assistant-master shipwright, in her Majesty's Dockyard, Woolwich, and was built by the Messrs. FORRESTT, for the National Institution for the Preservation of Life from Shipwreck, who purpose to place the boat at Ardrossan, on the coast of Scotland. Having been hove keel up, by means of an iron crane, the boat self-righted at once, and freed herself of the water she had thus necessarily shipped in 30 seconds. The rapidity with which the boat emptied herself of the water, by means of the self-acting delivering valves, gave great satisfaction. On a trial of the stability of the boat, she bore seventeen persons on her side to bring the gunwale down, with the tubes shut, to the water; and twelve men were required to bring it awash, with the valves open. It will thus be observed that the self-righting power of the boat has hardly diminished her stability.

NEW BOOKS.

The Lifeboat, or Journal of the National Shipwreck Institution. Charles Knight, London.

FOR the purpose of collecting information concerning Shipwrecks, and with the very praiseworthy desire of placing efficient means of preserving life, by means of lifeboats, &c., wherever it was at all probable that vessels, during gales, might be exposed to those disastrous calamities for which our coast is, *par excellence*, distinguished—as well as with the intention of rewarding those who display energy, courage, and ability in rescuing from a watery grave the unfortunate sufferers, a society was founded in 1824, which took the name of the "Royal National Institution for the Preservation of Life from Shipwreck." Since its establishment, it has been actively engaged in carrying out, to the utmost that its funds would allow, the benevolent

intentions of the founders and promoters, as is exemplified in the fact that, out of thirty-four Lifeboats, the Society has either been instrumental in procuring them for such places as most required them, or, as in the majority of cases, it has itself furnished the means for providing them. Between 1824 and 1852, there have also been awarded 78 Gold, and 523 Silver Medals—as well as £8,790, as rewards; and it is gratifying to know that upwards of 8,000 lives have been saved.

Of the usefulness of such a Society, no one can, for a moment, doubt; and it behoves all, but especially those engaged in Maritime affairs, to support an institution of this character. For the purpose of augmenting its funds, the Quarterly Journal, called the "Lifeboat," has been established; and we feel assured that no one, who casts a glance at the Wreck Chart of the British Isles for 1852, which will be found in No. 11 of this little periodical, will question the advantages to be derived by supporting the Society, if the funds are judiciously expended, as we have every reason to believe they are.

The objects of the Society may be thus briefly summed up:—

"1. To confer honorary rewards in the form of medals and votes of thanks, and also to grant pecuniary remuneration to all persons who, at the risk of their own lives, save, or attempt to save, those of others on board vessels wrecked, or in distress, upon any part of the coast of the United Kingdom. The honorary rewards being extended, in striking cases, to similar services in other parts of the world.

"2. To build, station, and maintain in repair, life-boats of the most perfect description; to furnish them with all necessary appurtenances, including houses to preserve them in, and carriages for their conveyance to the spots where their services are called for; and further, to provide, through the instrumentality of Local Committees, for their proper management, and the occasional exercise of their crews.

"3. To furnish and station at suitable places the rocket-apparatus, for effecting communication with stranded vessels.

"As an index of the necessity for the provision of such a machinery as the above, we may state—that the average loss of lives from shipwreck, on the shores of the United Kingdom, is between 600 and 700 per annum, and that in the year 1852 it amounted to 920."

NEW MARINE PRINTS.

The Himalaya; Peninsular and Oriental Company's Screw-steamer.

The Crœsus; General Screw Steam Shipping Company's Screw-steamer.

H. J. Buchan, Southampton; W. Foster, 114, *Fenchurch Street, London.*

THESE are tinted Lithographs of the finest Screw-steamers, forming part of the noble fleet of the two companies to which each respectively belongs. They are executed in a superior style, and deserve the consideration of all collectors of prints in the "Nautical Line," to whose stock they will form a very elegant addition.

NEW CHARTS.

Charts published and corrected by the Hydrographic Office, Admiralty, in February, 1854. *Sold by J. D. Potter, Poultry, and Tower Hill, London; and the principal Chartsellers; also at the various Custom Houses of the Kingdom.*

			s.	d.
Sea of Marmora. Rhoda Channel, &c.		Capt. Spratt, R.N., 1853	0	6
Bosphorus, 2 Charts		Lieut. Legard, R.N., 1835, each	2	0
Baltic &c., Helsingfors, Sveaborg.		Swedish, 1837	2	6
„ Bomarsund, Aland Isles		„ 1834	0	6
„ Christiansund			0	6
„ Gottenburg		corrected to 1854	2	0
South America, W. Coast	Sheet 19	Verde Point to Buenaventura, Capt. Kellett, R.N., 1849.	1	6
„ „	20	Buenaventura to Cape Marzo, Capt. Kellett, R.N., 1849.	1	6
„ & Central America	1	Cape Marzo to Cape Mariato, Capt. Kellett, R N., 1849.	1	6
„ „	2	Cape Mariato to Cape Parida, Capt. Kellett, R.N., 1849.	1	6
„ „	3	Cape Parida to Gulf of Nicoya, Capt. Kellett, R.N., 1849.	2	0
„ Panama Bay		Capt. Kellett, R.N., 1849	2	0
North America, West Coast		Maclochlin Harbour, 1853	0	6

EDWARD DUNSTERVILLE, MASTER, R.N.

Admiralty, Feb. 22nd, 1854.

No. II.—In page 56, line 5, *for* "W. 32½° N.," *read* "N. 32½° W."

[*All communications to be addressed* "EDITOR OF THE MERCANTILE MARINE MAGAZINE, *care of Mr. W. Foster,* 114, *Fenchurch Street, London. N.B. The real name and address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*]

TO SEVERAL CORRESPONDENTS.—In reply to numerous communications, in respect to particular subjects on which it is desirable articles should appear in the *Mer. Mar. Mag.*, we beg to state, for general information, that the following are already in preparation, and will be inserted at an early date:—"The relative merits of the Aneroid and Mercurial Barometer;" "Harbours of Refuge;" "International Law;" "The position of the Merchant Service, and the claims of the Public, Owner, Master, and Seaman;" "Screw and Paddle-wheel Steamers;" "Iron and Wooden Ships;" Wrecks of British Ships."

A. C. DILLETANTE.—The information is of a date too remote; four surveys have been taken of those parts, since the occurrence to which allusion is made, and the locality is well known.

ALEX. C.—The communication of the 16th inst. does not come within the scope of this Magazine.

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

APRIL, 1854.

THE RELATIVE MERITS OF THE ANEROID AND MERCURIAL BAROMETERS.

"THE man who watches his barometer watches his ship," says an able and well-known nautical writer; and if this be true, too much attention cannot be paid to the determination of the merits and capabilities of the instrument, whatever may be the nature of its construction, whether it be the ordinary marine barometer so familiar to commanders in the merchant service, the aneroid that may be carried on deck, so that as some have supposed, "the topsails may be reefed or otherwise, as the hands move backwards or forwards," or any other form of instrument which may be considered desirable for employment on ship board.

Three instruments have been introduced to the notice of the seaman:—the ordinary mercurial barometer, the sympiesometer, and the aneroid barometer. On the sympiesometer we do not propose to offer any remarks at present, as it is our intention to deal with the two forms of the barometer mentioned at the head of this article, we shall notice the *construction* of these different instruments, their *performances*, and close with a few remarks on the *value* of observing the barometer at sea, which have not found place in the articles on meteorological observations and storms that have appeared in the former numbers.

Construction.—The ordinary mercurial barometer is constructed on the well-known principle of the weight or pressure of a column of the atmosphere balancing a column of mercury in vacuo. The mean height of the column of mercury thus balanced is a little below thirty inches; but as the atmosphere varies both in density and quantity in any particular place, and also a ship as she sails from one port to

another passes through localities, the density and quantity of the atmosphere over them also varying, the mercury in the barometer varies in the same proportion, sometimes standing nearly as high as thirty-two inches, at others falling below twenty-eight inches.

It is manifest that in order to observe *accurately* these changes, the construction of the instrument should be such that the height of the mercurial column will *always* be proportional to the quantity, density, and other meteorological affections of that portion of the atmosphere in which the barometer may be placed. The requisites of a good barometer are consequently as follows:—the most perfect vacuum that can be obtained in the chamber *above* the mercury, or that portion of the barometer tube not occupied by mercury. If there be air above the mercury, the elasticity or pressure of this air will depress the mercury in the tube, and it will consequently stand at a level *lower* than that indicating the *true* pressure of the atmosphere. Another requisite is the proper adjustment of the scale, so that it shall always read the correct height of the surface of the column from the mercury in the cistern.

The above conditions may be regarded as the most essential for a good mercurial barometer suitable for sea use. In order to insure the first it is usual to boil the mercury at the time the tube is filled. The best mode of ascertaining if a good vacuum exists, is gently to incline the instrument so that the mercury shall *strike* against the top of the tube; if it strike with a sharp and audible tap, the instrument is a good one; but if no sound be heard as the mercury reaches the top of the tube, then the instrument may be considered as faulty, the air above the mercury interfering with the well-known click of a good vacuum. Again, let the entire length of the tube be well surveyed; look closely for small specks indicative of minute bubbles of air, should they exist they will infallibly deteriorate the instrument by gradually escaping into the vacuum. A perfectly *clean* tube free from specks is an indication of a good instrument; and it is essential that instruments of this character should be used at sea.

The construction of a good marine barometer may be thus defined. A well-filled tube from which the air has been entirely excluded, so that a vacuum as perfect as can be obtained may exist above the mercury, This tube should be mounted in a suitable case, furnished with gimballs, so that on being suspended on board it may always take a vertical position; it is usual to contract the lower portion of the tube to prevent as much as possible oscillations of the mercury arising from the rolling of the ship, which render it difficult to read the instrument. On the case inclosing the tube, a scale carefully divided into inches and tenths is placed in such a position that the *true* height of the mercury may be read off at least to hundredths of an inch by the help of an attached vernier.

The construction of the aneroid is very different; just as a *balance* for the determination of weight differs from a *spring* when employed for the same object, so the mercurial barometer differs from the aneroid, and we all know the greater dependence we are in the habit of placing on the balance rather than on the spring. The mercurial barometer is

none other than a balance; it is in fact a pair of scales, the atmosphere occupying one, the mercury the other, the column of atmosphere pressing or pushing up the mercury in the exhausted tube. Not so the aneroid; this is a tube it is true, and an exhausted tube, but it is sealed at both extremities, nothing occupies it, it is to all intents and purposes empty. While, however, it is a tube, it is not perfectly cylindrical as that of the mercurial barometer; it is a cylindrical tube *flattened* at first on one side and then curved inwards, the tube thus curved presenting a section somewhat similar to the sun when partially eclipsed. This tube which is bent into the form of an imperfect circle is composed of *thin* metal, upon the *elasticity* of which the action of the instrument depends, and here we shall see a vast difference between the mercurial barometer and the aneroid. For mercurial barometers to read alike, it is necessary each vacuum should be as perfect as possible, and that the scales should be accurately adjusted. For aneroids to read alike, it is necessary the metallic tubes of each should possess, if not the same thickness of metal, *certainly the same elasticity or spring*, the action of the atmosphere upon them being of this character, when an increase of atmospheric pressure takes place the extremities of the tube approach each other, the tube itself is in fact elongated or lengthened by this increased pressure. As the atmospheric pressure decreases the tube returns to its original dimensions *if it be sufficiently elastic;* of course, if its elasticity be but slight then *it does not return to its original form;* its action therefore depends entirely on its elasticity. So far as the principles are concerned which give rise to the action of these different barometers, we should most certainly recommend the mercurial as by far the safest, and in the readings of which the greatest confidence can be placed.

If the different principles of action furnish a reason for the preference of one kind of barometer rather than another, the mode of graduation of the aneroid would be sufficient we apprehend to settle the question. For this purpose *a standard mercurial barometer* is subjected, in connexion with the aneroid to be graduated, to artificial variations of pressure, so that as the mercurial instrument varies, the index of the aneroid moves either backwards or forwards as the pressure is diminished or increased. There does not appear to be an independent mode of determining the value of the indications of the aneroid, *i.e.*—there is nothing in the instrument itself that will give the value of its readings as in the mercurial barometer; in the latter instrument we can measure directly the height of the column of mercury, we need not go to another instrument to ascertain the value of its indications; the aneroid after all is but an exponent of the movements of the mercurial barometer from which it was graduated, provided the metal forming the thin coiled tube has preserved the integrity of its elasticity. The seaman who employs an aneroid on board his vessel is only using the indications of a mercurial barometer, through a medium capable of undergoing changes of a variable and unlooked-for character. An authority of high standing in meteorological science has publicly stated his expectation that such instruments are not applicable to meteorological observations.

Performances.—Under this head we shall first notice an important experiment made with two aneroids; they were placed within the receiver of an air pump, the indices of both indicating a pressure upwards of thirty inches, upon withdrawing the air the indices moved together until they were both directed to 29·5 inches, from this point they began to deviate, one moving much more rapidly than the other, so much so that when one indicated a pressure of 28 inches, the index of the other was directed to 27 inches. From what has been already stated, the explanation of this great difference is very apparent; the elasticities of the metallic tubes differed; one yielded much more readily than the other to the diminished pressure, and stood at 27, an inch below the other. A question suggests itself here, which of the two indicated the true pressure of the atmosphere? May not both have been correct, but in consequence of the graduations having been effected by means of a mercurial barometer, one if not both of them differed under these circumstances from the mercurial barometer or barometers to which their graduations had reference.

Captain Methven, of the *Blenheim*, has the following remark:*—"Relative to the aneroid as compared with the barometer, I carefully registered, on the outward passage, two with my barometer, which was a very good one, and could not perceive that the aneroids were more sensitive than the barometer. The three instruments rose and fell simultaneously. I found, however, that the aneroid oscillated with the pitching of the ship, or the hands moved in the direction they would stand, as if placed vertically instead of horizontally, there being a difference of ·04 in these positions. In looking over Captain Robertson's log, I find his aneroid and sympiesometer affected very differently to his barometer."

Captain Robertson's aneroid appears to have been much in the same condition as one or both of the two instruments noticed in the experiments above mentioned, it is likely it could not be depended on. Captain Methven's aneroids appear to have preserved a constant difference from the mercurial barometer; it is to be assumed that some difference existed between the readings, even if it were slight, for the Captain does not inform us that the readings of the three were identical, only that they rose and fell together. We have been favored with a series of simultaneous readings of the barometer and aneroid in a passage round Cape Horn, the two instruments exhibited similar phenomena to those of Captain Methven; they rose and fell together, but preserved more or less a nearly constant difference of about half an inch, the aneroid reading the highest of the two. The readings are 73 in number, ranging from 28·60 to 30·41 mercurial barometer, the means of the 73 observations are as under:—

	Mer.	Aner.	Diff. Aner. +
Mean	29·56	30·04	0·48

Upon classifying these readings, we shall find a variation in the differences between the mercurial and aneroid barometers amounting to

* Narratives of Sea Commanders, No. 1. The Blenheim Hurricane of 1851.

the tenth of an inch, the differences in various parts of the scale are as under:—

Between	28·5	and	29·0	Aneroid	0·49	+	8
,,	29·0	,,	29·2	,,	0·47	+	11
,,	29·2	,,	29·5	,,	0.48	+	13
,,	29·5	,,	29·8	,,	0·54	+	13
,,	29·8	,,	30·0	,,	0·48	+	15
,,	30·0	,,	30·5	,,	0·44	+	13
							73

The last column contains the number of readings contributing to each result.

From these figures it is apparent that in the ordinary barometric range of two inches, variations from the mean difference to the extent of six hundredths of an inch will sometimes occur. If, however, we refer to individual readings, we shall find as great discrepancies as half an inch between the differences themselves. Some being as low as two-tenths of an inch, and others as high as three-quarters of an inch.

Considerable light is thrown on these discrepancies by the fact that the aneroid now under consideration exhibited greater sensitiveness than the mercurial instrument; in the majority of instances it rose and fell to a greater extent, the following tables will exhibit this:—

	Mer.	Aner.		Mer.	Aner.
Max.	30·41	30·88	Max.	30·41	30·88
Min.	30·20	30·65	Min.	29·86	30·32
Rise	·21	·23	Fall	·55	·56
Max.	30·16	30·63	Max.	30·16	30·63
Min.	29·86	30·32	Min.	29·18	29·57
Rise	·30	·31	Fall	·98	1·06
Max.	30·11	30·65	Max.	30·11	30·65
Min.	29·18	29·57	Min.	29·58	30·05
Rise	·93	1·08	Fall	·53	·60
Max.	29·86	30·35	Max.	29·86	30·35
Min.	29·58	30·05	Min.	29·78	30·28
Rise	·28	·30	Fall	·08	·07
Max.	29·81	30·54	Max.	29·81	30·34
Min.	29·78	30·28	Min.	28·65	29·08
Rise	·03	·06	Fall	1·16	1·26

	Mer.	Aner.		Mer.	Aner.
Max.	29·22	29·72	Max.	29·22	29·72
Min.	28·65	29·08	Min.	29·15	29.65
Rise	·57	·64	Fall	·07	·07
Max.	29·20	29·62 *	Max.	29·20	22·62
Min.	29·15		Min.	28·89	29·37
Rise	·05		Fall	·31	·25†
Max.	29·30	29·80	Max.	29·30	29·80
Min.	28·89	29·37	Min.	28·89	29·40
Rise	·41	·43	Fall	·41	·40†
Max..	29·41	29·93	Max.	29·41	29·93
Min.	28·89	29·40	Min.	28·60	29·10
Rise	·52	·53	Fall	·81	·83
Max.	29·26	29·80	Max.	29·26	29·80
Min.	28·60	29·10	Min.	28·35	28·85
Rise	·66	·70	Fall	·91	·95
Max.	28·90	29·40			
Min.	28·35	28·85			
Rise	·55	·55			

The above tables are sufficien tto show that, of the two instruments under consideration, the aneroid was the most sensitive, *i.e.*—it made the largest excursions in passing from maxima to minima, and the converse; only two instances in the above series exhibit a greater movement in the mercurial barometer. We have marked them †, and they are confined to a decrease of pressure.

Could we determine, without reference to a barometer at all, the amount of elongation of the tube of an aneroid due to certain increments of atmospheric pressure—could we depend on every aneroid possessing a tube of similar elasticity so that its movements would keep pace with every other, there can be no doubt it would become a highly valuable and most useful instrument. In the case before us, and as compared with the mercurial barometer, it appears calculated to give important informrtion to the seaman—on one occasion the recorded fall being full a tenth of an inch greater than the fall of the mercury. To this however in the instance under

* In this case the movements of the instruments were *opposite*, the mercury rising, the aneroid falling. The fall was ·03 inch.

† Aneroid's movements less than those of the mercurial barometer.

consideration, we have a drawback of no ordinary kind to contend with—the reading of the aneroid being nearly half an inch *higher* than that of the mercurial, the Captain might easily be misled as to the real indications of the instrument.

But we must not forget to look at the other side of the question, so far as these two instruments are concerned. We have no evidence before us of the state of the mercurial barometer, and therefore we are unable to judge as to which of the two instruments exhibited the *true* pressure of the atmosphere; this is important, especially in the comparison of instruments. The movements we have seen were nearly similar and for all ordinary sea-going purposes, the lowest barometer would clearly answer as well as the highest. It did not fail to indicate large diminutions of pressure. Stiff gales, and the approach of the ship to the centres of rotating storms were most characteristically marked by low readings. A rise of the mercury was accompanied by a moderating of the wind and so forth; all these points the log clearly brings out. When however we proceed to compare one instrument with another, we require some standard of reference; in the instance before us it is more than just possible that the mercury may have been depressed in the tube by the presence of air above, and if so we have not only the lower readings of the mercurial barometer explained, but also its comparatively sluggish movements. The elasticity of the confined air would prevent the mercury rising so high in the tube, and when the external pressure was withdrawn, the air within the chamber would become rarer and exert *less* pressure on the column, so that it would not sink so low. If therefore the readings of the aneroid were in accordance with those of the barometer from which it was graduated, the lower readings of the mercurial barometer resulted from *air above the mercury*.

We have been thus particular in our analysis of these readings, knowing that a few facts carefully discussed lead to much more valuable results than volumes of theories. If we are advised to make our observations at sea, although we may not have a "compared" barometer on board, let us endeavour to turn the observations with uncompared instruments to the best account rather than cast them away as useless.

Capt. Methven has a most pertinent remark on the use of barometers; he says, in reference to the sentence with which we commenced this article. "It [the barometer]* is certainly a most valuable instrument to the navigator, but I would qualify this remark, (the man who watches his barometer watches his ship) and all such expressions as would withdraw an officer's eye from the study of the nature of the weather [as indicated] by the changing character of the clouds, looking on them [these expressions] as injurious, so far as they tend in the slightest measure to lead to this [the neglect of the study of the weather.] It is very obvious what meteorologists had in view, that the barometer should on no account be neglected, but they can have no idea to what extent faith has been carried. If the barometer do not

* The words inclosed in [ ] have been supplied.

fall at 8 p.m. with one man, he is sure of a fine night; unless it falls to a cockroach speck on the tube, a fancy mark with another, there is no necessity to attend to it. Both dogmas have been devoutly believed, and that by able men who would be amused by a suggestion of the utility of the aneroid, that it might be carried on deck, and the topsails reefed or otherwise as the hands moved backwards or forwards."

A word or two on the dogmas the Captain speaks of. The barometer falling at 8 p.m., indicates an imperfect apprehension of,—a viewing as it were through a mist—the beautiful phenomenon of what has been called the diurnal barometric tide. We shall not enlarge on this at present, further than to state that a clear apprehension of all the phenomena would enable the mariner speedily to determine the high probability of a change, or otherwise, of weather. Nothing is more injurious than blindly attending to certain rules without being fully acquainted with the principles on which they are founded.

The cockroach speck. How is this fancy mark to be determined without comparison? Well might Captain Methven characterise the non-attention to the barometer, unless it fell to a certain point, as a *dogma*. We have only to refer to the last number (*Mer. Mar. Mag.*) to convince us of the importance of constant attention to the barometer. Captain Barclay records a barometer as high as 30·90, the ship at the same time under close reefed main topsail and reefed foresail. In that case, if the cockroach speck, the fancy mark had been the signal for operations, where might the ship have been?

Captain Methven further says, "the barometer, as a general rule, will only corroborate inferences previously formed, *beginning to fall after bad weather has set in.* But in merchant ships, frequently of a heavy class, with powerful yards and sails, we must be in advance of our barometer." And how can we be in advance of this instrument? Only by thoroughly understanding it, by knowing its capabilities, by being fully acquainted with the nature of its indications, and above all, by possessing an intimate knowledge of its phenomena in all parts of the world.

Apropos to the attainment of this knowledge through the medium of *compared instruments*, we have a passage in the article on meteorological observations at sea to which we shall particularly solicit the attention of our readers, it is this. "The slightest deviation from the barometric mean between the tropics demands on the part of the commander immediate attention. And how is this barometric mean to be obtained? Simply by all vessels that will co-operate, reading their barometers every two hours on the voyage out and home." The differences between the mercurial and aneroid barometers introduced in this article clearly show how much this object will be facilitated by observations that are made through the medium of compared barometers. We get rid of errors arising from instruments differing the one from the other, and much *sooner* attain the object of which we are in search. If it be true that a deviation from the mean, a greater excursion of the mercury than that occasioned by the so-called diurnal tide indicates a coming storm, then the determination of this mean is important. We are better prepared for understanding the movements

of the mercury either above or below it; but especially above—for it often happens that a most terrific hurricane is heralded by a very high barometer. While too much attention cannot be bestowed on the indications of a low barometer, high readings should on no account be disregarded. Let us then determine in the best way we are able, and as early as we possibly can, the mean pressure on every part of the oceanic surface.

It may perhaps be considered that some of the foregoing remarks are inconsistent with others—thus we have strongly recommended the mercurial barometer, at the same time the readings of the aneroid introduced to the reader indicate its greater sensitiveness; this of course is a valuable quality at sea:—there is however one very important point connected with the aneroid that we have to become acquainted with. Does it always, under all circumstances, through all vicissitudes of temperature and other atmospheric influences retain precisely the same elasticity? We have also to ascertain how far temperature as well as pressure alters the form of the exhausted tube. We know temperature exerts considerable influence on metals—elongating and contracting them—and this may interfere with the indications of the instrument. As to the first point mentioned—the retention of the *same* elasticity—this can only be determined by comparisons with the *same* barometer at long intervals. Should an aneroid come out from an ordeal of this kind, indicating the same pressure as before, it must be pronounced a good instrument. We are not aware that such a comparison has been made, but we would urge on commanders the importance of comparing any aneroids they may possess with their mercurial instruments, and upon the reception of observations of the kind we shall be happy not only to publish the results, but previously to discuss the observations, as should the aneroid ultimately prove a trustworthy instrument, its portability is a great recommendation; but it could never under any circumstances obviate the necessity of carrying the mercurial barometer to sea.

While this is passing through the press, we have been furnished with abstract logs of four voyages from which we expect some elucidation of the working of the sympiesometer, which we shall notice at an early date.

M.

GREAT CIRCLE SAILING.

BY JOHN T. TOWSON, ESQ.

(*Concluded from page* 107.)

The principal ocean steamers made their voyages within the regions of the variable winds: the consequence is, that in such cases the wind is disregarded in selecting the route, and out and home these steamers have been navigated by the shortest route. But in a voyage to

Australia, in a route of upwards of 13,000 miles, steam is only required for about 3000 miles if the tracks of our sailing vessels be adopted. Hence we hear of one vessel, in steaming up against the winds, reduced to the necessity of falling to leeward for coals. Then, again, because by the Cape it is about seven per cent. shorter than by the Horn, they have returned as well as gone by that route. We have also instances of three coaling stations out, and three coaling stations home; so that, if we allow four days for coaling, from this cause alone twelve days on each passage have been wasted. The advice which I have given, is to coal on the outward voyage at Bahia, and on the homeward voyage at the Falkland Islands. This route has been successfully followed out in each particular, except coaling at St. Vincent instead of Bahia; and for this change there is a valid reason in the state of health at Bahia or Rio. If a coaling station be required on the homeward voyage, the Falkland Islands are undoubtedly the best calculated for that purpose.

There is, however, another problem which remains to be solved, for which the experience of steamers on the composite routes will soon furnish us the data. Is it desirable that steamers should require any coaling station on the voyage out and home? The number of days during which I consider such steamers as the Great Britain would require steam, out or home, will prove to be about twenty. Now, at neither station, either out or home, is more than one-third of the total amount of coal taken on board. By decreasing the amount of coals required by the engines to two-thirds the present amount, we should decrease the power of the engine one-third. But this decrease of power would increase the time required to steam across the regions where the aid of steam is wanted not more than from twenty to twenty-four hours. So, then, if one-third the coals is expended in increasing the speed of the vessel so as to save the time lost in coaling, we cannot regard such an expenditure in any other light than a waste. Before, however, we can establish such a proposition as a fact, further data are required.

When reviewing the passages of steamers in comparison with sailing vessels, we have regarded them as failures up to a very recent period. This term must be taken in a restricted sense. In one respect steamers have been superior—in contributing to the health and comfort of the passengers. With a tropical temperature there is an incessant roll which frequently in these climates affects even the experienced seaman, but to the landsmsn it is unbearable. Under these circumstances the sickness and fever arise; and to bear out this opinion we have the fact that the mortality of passengers on board the steamers that cross the line is only 10 per cent. of the proportion of that experienced by those on board of sailing vessels. While the sailing vessel is rolling about in the calms, the steamer is making a quick passage through the tropics.

But I hope that the evil influence of calms may be greatly reduced on board of sailing vessels. By the reports we have received of vessels that have passed the line by Lieut. Maury's route, calms are very little felt. It appears that the regions on which these calms exist

being of a wedge form, with the sharp edge on South America, he recommends that the line should be crossed at 30° west, instead of further east; and I have no doubt, from the data by which he supports this advice, that vessels from England to Australia will be benefited by taking this route. Several Liverpool ships have started with the intention of making this route. There is no advice more strongly enforced in Horsburgh than to give Cape St. Roque a wide berth; this advice, and many other remarks made in this work, must be disregarded by modern mariners, although they were well suited for the day in which that work was compiled. With such ships as were built some fifty years since, no better advice could be given than to avoid falling into the current that runs round that Cape. But what was the condition of our Mercantile Marine at that time? In order that no vessel should escape the supervision of the British cruisers, and thus infringe our fiscal regulations, the custom-house enforced a law that no British merchant vessel should be longer than three-and-a-half times her breadth. The tonnage laws co-operated with this regulation to swaddle our Mercantile Navy into such a state of deformity, that well might the mariner of that day be scared at the idea of approaching St. Roque, although in the present day, with our clippers, we may treat such a fear as a bugbear.

In concluding the subject I have had the honour of bringing before this Society, allow me to remark that I hope I have proved one point to your satisfaction—that the commanders of Australian emigrant ships are required to be men of superior skill and quick perception, of good natural abilities, and possessing a full amount of that class of education which is best qualified to place a shipmaster at the head of his profession. That line of ships can only attain a high standing in the estimation of the public whose commanders are men of that class. Above all, the captain of an Australian ship should cultivate a clear notion of this earth as being a globe. I would not do one of them the injustice to insinuate that he does not assent to the truth of the hypothesis that this earth is a sphere. But we often assent to the truth of a proposition, and yet fail in carrying out its principles in practice. So it is with the mariner. He is so accustomed to regard places as they appear to be situated on his chart, that he ceases in practice to regard the earth as a sphere. I do not recommend him to cast aside his chart, but as frequently as possible to compare his chart with the globe, and by so doing to acquire the power of discerning in the distorted shadow the substance to be represented. To young men who desire to rise in their profession there is every inducement to energy. Never was there a greater demand for talented master mariners, nor was there ever such an opportunity offered to those who wish to avail themselves of the advantages afforded. Fifty years ago the government exerted their utmost power to cripple the Mercantile Marine. Now, on the contrary, the Board of Trade have afforded an establishment at this port for the instruction of those who desire to advance in their profession—such as they have never previously possessed. To all present I would say, do your utmost to advance science; do not look too narrowly to the subjects that

come within your notice in a utilitarian sense. There are branches of science the utilitarian value of which is not at first seen. I have endeavoured to show you instances in which meteorological observations are calculated to be of great practical value to the mercantile interest of this port. I hope the suggestions of Lieutenant Maury regarding a record of meteorological observations at sea will be carried out. Liverpool can afford more valuable information on this subject than any other port. Its extended commerce takes its ships to every port of the globe. For observation in the Australian tracks, the means that Liverpool possesses cannot be surpassed by any other port. But beyond all, if we were to search every port in the world, I would defy you to produce an individual better qualified to superintend such investigations than Mr. Hartnup. I never met clearer illustrations of series of meteorological observations than such as have been arranged by him. The solution of the problem of the shortest route to and from Australia is reserved, I believe, for Liverpool; and I see no reason why we should go out of Liverpool for the arrangement of data so important in connection with the solution of this problem.

CUNNINGHAM'S PATENT SELF-REEFING TOPSAILS.

In our last number we alluded to "Cunningham's Patent Self-reefing Topsail," with reference to the loss of the ship *Tayleur*. Since then Mr. Cunningham has favored us with some particulars of his invention, and as we have no doubt the subject will be interesting to our readers, we now quote some of Mr. Cunningham's remarks.

It appears that the yards are simply fitted to turn round in the sling hoops and yard-arm irons, and that the sail is reefed by rolling it up on the yard as the sail is lowered—a provision being made for it to clear the centre fittings of the yard. The mode by which the yard is turned is singularly simple; it is merely slung in the bight of the chain topsail tye, a whelped grooved boss being fixed to the yard within which the chain lays. The fore part of the tye is fitted to be a standing part, and it will be seen that when the after part is lowered upon, the yard necessarily turns round as it descends the mast, and in so doing rolls up the sail snugly thereon; and again, where the after part of the tye is hoisted upon, the yard is parbuckled up, and the sail unrolled. A spar is applied on the after part of the yard to keep off chafe against the lee rigging when the sail is rolled round the yard. This spar also carries the topgallant studding sail booms, which by thus being independent of the yard admits of the topsail being reefed with the booms rigged out, which in a squall is a most important advantage.

The accompanying sketch will assist in illustrating this description. Fig. 1 is a side or elevational view of a topsail yard, rigged complete.

A and B are the two parts of the topsail tye, passing under the topsail yard, the foremost end being led through a sheave-hole in the topmast head, (a score being cut in the heel of the topgallant mast to allow it to pass,) and the after part led in the ordinary manner; both parts are fitted with halliards, thus forming as it were double halliards. The clewlines are brought to the cap at D, and a " down-haul" is provided to assist the yard down when required, as seen at C. To set the whole topsail in the first instance, both halliards A and B are hoisted on, which lifts the yard bodily up. The foremost halliard A is then belayed; and the reefing and unreefing of the topsail, as before described, is produced by lowering or hoisting on the after halliard B. When both the halliards are lowered upon, the whole sail comes down in the ordinary manner. Fig. 2 represents a topsail, close reefed.

It appears that Mr. Cunningham's invention has now been fitted to a considerable number of ships, and of sizes up to 1200 tons burthen. Many of these ships are on their second voyages to the Eastern Seas; and one (the *Tropic*) has been three voyages to the West Indies, and is now about to depart on her fourth. Some of the ships have had these topsails in use upwards of three years, and all the reports concur in testifying to the greatly-diminished wear of the sails.

The reports vary as to the number of men required to reef the sails, but it is confined to very few—say, for a 500 ton ship, three or four are sufficient to reef one topsail in a few minutes. One important feature also in the plan is, that it does not require *regular seamen*. Any persons who can pull a rope are sufficient for the purpose of reefing one of these topsails—hence the necessity of having so many regular seamen in the crew is not so important. At this juncture, when the difficulty of procuring good seamen for the crews of merchant ships is so great, this advantage is one of high consideration. Another character of the invention appears very striking: viz., the increased safety which the ability to make and shorten sail so quickly affords to ships, especially vessels employed in the coal trade, with reference to entering bar-harbours in heavy weather, such as the Tyne, Wear, and Hartlepool. It appears that two brigs attribute their safety to this during the gale of September, 1852, when so many vessels were lost on the bar of the River Wear, when entering the river during a strong easterly gale. The two brigs in question, before taking the broken water, ran their topsails to the mast head, which gave them such increased propelling power and such perfect command, as to enable them to pass the bar in safety, whereas numbers were lost by becoming unmanageable when in the breakers, in consequence of the reduced sail they were under not being sufficient to drive them through the danger.

Much more could be said of the various advantages conferred on shipping by Mr. Cunningham's valuable invention, but time and space will not permit. We will therefore conclude by heartily commending Cunningham's Patent Self-reefing Topsail to the best consideration of the ship owner, captains, and indeed all concerned in the welfare of the shipping interests.

OUR MERCANTILE MARINE.—No. III.

Loss of the Tayleur, Olinda, and Annie Jane: Official Reports.

CAPTAINS F. W. BEECHEY, R.N., and W. S. WALKER, H.C.S., having been appointed by the Board of Trade to inquire into the circumstances attending the loss of the *Tayleur*, *Olinda*, and *Annie Jane*, the official reports of these gentlemen appear to be of such importance that we give them nearly *in extenso*. We shall afterwards proceed to offer a few remarks on each, taking into consideration at the same time the appointment of a select Parliamentary Committee "to inquire into the recent cases of extensive loss of life on board emigrant ships."

[CAPT. WALKER'S REPORT: LOSS OF THE TAYLEUR.]

The new ship *Tayleur* belonged to Messrs. Charles Moore and Co., of Liverpool, was classed A 1 at Lloyd's, registered 1,979 tons, and was by the old measurement 1,640 tons; the draft of water, as stated by the master, was 17 feet forward and 18 feet 3 inches abaft. Her crew consisted of 56, including the commander and three mates, but there were 70 names on the ship's articles, 14 stewards having been engaged to attend the passengers, receiving for wages one shilling a month, with permission to remain behind in Australia; and there appear to have been 13 saloon and 445 steerage passengers, making a total of 528 persons.

The ship was constructed of iron, and divided into five distinct water-tight compartments, each having a separate well and sounding pipe; her length on deck was 234 feet, and her extreme breadth about 29 feet; she had three decks permanently laid, and a round-house 40 feet long, and appears to have been a strong, well-built ship, and abundantly equipped with stores for her intended voyage, having been inspected and approved of by Lieutenant Prior, R.N., the Assistant Emigration Officer, who reported that every thing was on board in accordance with the provisions of the Passengers' Act, and granted a certificate to that effect.

The *Tayleur* left the Mersey on Thursday the 19th of January, at noon, and about 7 or 8 P.M., having arrived between Point Lynas and the Skerries, the pilot left the ship; but previous to his doing so the captain had remarked that there was a difference of half a point in the compasses. The wind at this time was S.S.W., the ship on the port tack, and the weather tolerably fine; they had one reef in the topsails. The breeze now freshened quickly, and by 9 o'clock it was blowing a strong gale, and it became necessary to reduce sail to close-reefed topsails; this was a work of labour, and not accomplished until 3 or 4 o'clock in the morning.

It must be taken into consideration that the *Tayleur* had only been about 12 hours from port. The running rigging and sails were new, and of course more difficult to work than they would have been after being in use for a little time; the officers and crew were strangers to each other—generally the case at the commencement of the voyage; but, allowing for all these difficulties, there must have been great blame or inefficiency somewhere.

Captain Noble, in his evidence, states that the reef tackles were foul, and that it took a long time to clear them; that the boatswain and some three or four of the men were suffering from the effects of drunkenness, and had stowed themselves away to escape their duties. Certain it is, that, during these six hours, the crew were employed in reducing sail and taking two reefs in the topsails; that the main topsail was split, and the ship must have been drifting bodily to leeward; and Mr. Nichols, an old sailor, one of the passengers, states that the sails were flapping all night, and if the canvas had not been new, they would all have been blown to pieces. This, I think, will sufficiently account for the alarm felt by the passengers not accustomed to shipboard, as, during the same time, the night was dark and stormy and the ship lurching heavily in the sea.

On Friday, the gale continued from the southward, moderating at intervals, which enabled them to make more sail; the crew was employed in putting things into their places, and occasionally wearing ship; and through the exertion of the master and his officers, the men appear to have been more active and efficient in their duties.

It is stated that about 4 o'clock on Saturday morning the Skerries Light was in sight, bearing S.W. about 12 miles, not very far from the place where the pilot had quitted the ship on Thursday evening. The wind is now described as being more moderate and backing to the S.S.E., which enabled the ship to make a S.W. by W. and S.W. course. Up to 8 A.M. this day we hear of no further complaints of the compasses; and the captain states that he saw the Calf of Man Lights and returned to the Skerries, and his calculations were apparently correct; but now it was discovered that there was a difference of one and a half and two points between the compass before the helmsman and that in front of the poop, and that the one fixed on the skylight, between the two, was so sluggish that it would not act at all; other cards were put into the foremost binnacle, but the result was the same, and even showing a greater discrepancy; the master attributed this to the influence of the chain mizentopsail sheets, and acted upon the supposition that the compass before the wheel was correct.

The ship apparently continued to steer S.W. and S.W. by S., but the wind increased, and by 11 o'clock the ship was under close-reefed fore and mizentopsails, double reefed main topsail and foresail, and the supposed position was Wicklow Head, W. by S., 20 miles. The weather had been thick and hazy up to about half-past 11, when the wind shifted suddenly to the S.S.W., the weather clearing a little at the same time, and the land was seen on the lee beam and extending to about two points on the weather bow, and supposed to be three or four miles distant (which, in my opinion, could not have been the case.) They tried to wear the ship off the land, but not succeeding, the two anchors were let go, the chains broke and the ship drifted broadside on to the rocks. And now the greatest confusion prevailed; many jumped on the rocks, some lost their lives in the attempt; the master appears to have been cool and collected, and, by placing spars and ropes from the ship to the shore, enabled many to save their lives. The spritsailyard was over-hanging the rocks, and a rope being attached, most of the crew got on shore by it; but I regret to say that, out of about 100 females, only three were preserved. The ship continued to roll heavily against the rocks for a little time, when a sea broke over her, carrying everything before it, and the unfortunate *Tayleur* went down stern foremost; and, by this sad calamity, out of 528 persons, 290 met with a watery grave, the master being the last person who left the vessel.

From a careful consideration of the evidence, I am of opinion that the loss of the *Tayleur* was occasioned by the master making his calculations, and placing his position on the chart, upon the supposition that the compass before the helmsman was correct. He was aware there was a difference of two points between the compasses, but he knew not which was in error; and I further think the wreck of this vessel might have been prevented had the master taken the precaution of using his lead. He had the Admiralty chart on board, and looked at it every hour, and the sounding must have stared him in the face. I put the following question to him:—

"Such being the case, do not you think you were wrong in not trying for soundings?"—"I think I did wrong, and this will be a warning to me in future."

And Lieutenant Prior, R.N., a very intelligent officer, who for three years commanded a packet conveying the mails between Liverpool and Dublin, states, "I have run between the Bell-buoy and Kingstown by my soundings."

My inquiry having elicited the particulars of the wreck, I beg to observe, that it appears strange to me that the owners of an iron ship with iron masts, who spared no care nor expense in fitting her for sea, should have omitted taking the necessary precaution of ascertaining the local disturbance of the compasses, by swinging the vessel after the stores and equipments were on board; this operation having been performed two months prior to sailing, and before the cargo was taken in.

The number of instances in which vessels have been lost by the compasses being in error renders it desirable that more care should be bestowed on this subject; and it is extraordinary that the commander of the *Tayleur*—who holds

a first-class certificate, and who, in consequence of having passed such an excellent examination, was recommended by the Liverpool examiners as an excellent officer—should have proceeded to sea, unprovided with an azimuth compass—and should have started in an iron ship on a voyage to the southern hemisphere, where the compasses might have been differently affected, without the means of ascertaining with accuracy the error of his compasses; more specially when he admits in evidence that he had *carte blanche* from the owners to procure everything he wanted. And I beg to suggest to your lordships whether it might not be desirable for the Emigration Commissioners, in addition to the excellent instructions now issued to their officers, that they should require every vessel coming within the provisions of the Passengers' Act to be provided with that necessary and valuable instrument—an azimuth compass; and that all iron ships and steamers should have their compasses adjusted, the deviation ascertained, and a card with a table of errors produced before the vessel proceeds to sea.

Before closing my report, I consider it necessary to advert to the crew of the vessel, and to state that I do not consider the *Tayleur* was sufficiently manned. By the articles it appears there were three mates, one surgeon, two carpenters, one boatswain, and one sailmaker, besides twenty-one stewards and cooks; but of the crew to work the ship, only twenty-two able seamen, thirteen ordinary seamen, and six boys, making forty-one in number. With the large number of passengers, the cooks and stewards (most of the latter had not been to sea before) would be fully occupied in attending to them.

It is stated by the master and his officers that after the first night the crew of the *Tayleur* (British and foreign) did their work very well, and I do not consider they are in any way implicated to the loss of the vessel. The instructions given to the Emigration Officers are, that in ships not under contract with the Commissioners they are, as regards manning, to comply with the usages of the port, and at Liverpool, as stated by Lieutenant Prior, three to the 100 tons are considered sufficient; now it should be understood that this is upon what is usually denominated the old measurement, which is a fallacy entirely, as will appear by the following statement as regards the *Tayleur*. She was by the old measurement 1,640 tons, but by the existing law, under which she was registered, 1,979 tons, and is supposed to have been of the actual burthen of 3,500 tons and upwards. She had on board at the time of sailing 2,516 tons, besides accommodation for 472 passengers, and it will be seen by the evidence of the carpenter that she had heavy masts and yards, to manage which she would have (supposing all to be on duty) only 21 men and boys in a watch. When it is remembered that this ship had to go a long voyage, to pass through the tropics, and then to encounter bad weather in a high latitude, where in all probability some of the men would be on the sick list, I think that three men to the 100 tons, as now calculated, are insufficient. Where vessels merely carry cargo it is for the owners and underwriters to manage their own business, but where emigrant passengers are carried, I presume they have a right to some protection from the government. The Emigration Commissioners require four men to the 100 tons for vessels under contract, and I respectfully suggest that this rule should be applied to all emigrant ships in accordance with the 25th section of 15 and 16 Vict., cap. 54.

Before concluding my report, I think it right to observe that, attributing, as I do, great neglect and want of caution to the master, it is only an act of justice to Captain Noble to state, that from the time the vessel left Liverpool, until she struck upon Lambay, he appears to have been most active and energetic in his duties, seldom leaving the deck, and after the wreck he did all in his power to assist the passengers, and did not relax his endeavours until the ship sunk under him and he had to swim in shore for self-preservation; also during the inquiry he evinced the greatest desire to give every information required of him, and gave his evidence in a straightforward manner, without a wish to disguise or conceal anything. His certificate of competency was lost in the ship, and it is for your Lordships' consideration to determine whether a renewed one should be granted or not, as without that document he must remain unemployed as a master of a British foreign-going ship. * * * Having noticed several remarks in the papers respecting the foreigners on board the *Tayleur*, it may be necessary to observe that they numbered fourteen, and by the evidence of the master and mates, they had every reason to be satisfied with their behaviour.

[CAPT. WALKER'S REPORT: LOSS OF THE OLINDA.]

I have the honor to inform your Lordships that the iron screw steam-ship *Olinda* belonged to the South American and General Steam Navigation Company, was built by Messrs. John Reid & Co., of Port Glasgow, and launched in April, 1853; she had engines of 200-horse power, by Messrs. Caird and Co., and was fitted with five water-tight bulk-heads; her length was 230 feet and 30 feet beam, the registered tonnage 605 32-100ths, and engine room 532 97-100ths, making a gross tonnage of 1,138 29-100ths. The ship and machinery were surveyed by Mr. Douglas Hebson, engineer, surveyor, and surveyor of iron steam-ships to the Board of Trade, on the 19th of September last, since which period she had made one voyage to the Brazils and Rio de la Plata, but was again inspected, and her machinery examined the day she left Liverpool.

The *Olinda* appears to have been a well-built ship, abundantly supplied with stores and equipments. Her commander had high testimonials; she had four mates, two having certificates as masters, and one as a first mate; the chief engineer was evidently a person of experience, and her crew consisted of 65, only two being foreigners.

This fine ship, so well manned and equipped, left the Mersey on the 26th of January last, under charge of Mr. Edward Fletcher Callister, a first-class branch pilot; her draught of water being 15 feet forward and 14 feet 10 inches aft. She passed the N.W. Light-ship about noon; it was blowing strong from the W.N.W., with a slight haze on the horizon and a heavy sea on. About 5 P.M. the Ormshead was made, and a course shaped for Point Lynas. The master now went below, and requested the pilot to inform him (by sending one of the officers) when they were abreast of it. At half-past 7 one of the mates, by direction of the pilot, informed Captain Haram that they had passed Point Lynas, who forthwith proceeded on deck, and found the ship about two miles to the westward of the light. Blue lights were now displayed to attract the notice of any vessels near, and to enable the pilot to quit the ship; but as they were not answered the master inquired of Mr. Callister what he purposed doing. His reply was, to take her through the inner channel, and in the event of not falling in with a boat, to proceed to Lisbon in the vessel. The master said he objected to the inner channel very much; when the pilot replied that he had been 23 years in the service, had gone the passage day and night, that he had never met with an accident of any kind—it was perfectly safe, and if left alone nothing would occur. About 8 P.M. the chief engineer states that the water was smooth, and the pilot sent for him to ask if he could drive the engines a little faster; the vessel was then going eight or ten knots.

The master, now fearing they were getting too near the land, desired the man at the wheel to port the helm; when the pilot requested he would not interfere or give any orders. At 8·45, a few minutes after this conversation, the pilot called out "hard a-port," and in a few seconds the vessel struck heavily upon the rocks; the tide took her stern to the N.W., and knocked off the rudder and outer stern post. It was soon reported that the two foremost compartments were full of water, and there was no chance of saving the ship. The life-boat was lowered, and the females and children put into it; blue lights, rockets, &c., as signals of distress, were made, which brought to their assistance a pilot-boat, and also a boat from the shore; and though it was blowing a gale from the S.W., the passengers and crew were landed in safety.

Having carefully examined the evidence, I have no hesitation in saying that the loss of the *Olinda* was occasioned by the imprudent conduct of the pilot, in attempting a narrow and dangerous passage, when he could not distinguish one object from another; and he admits that he took a wall on Camlyn Point for the beacon on the Harry Furlough Reef. When it is taken into consideration that other dangers were in the inner channel, with only buoys to denote their position, and that he has stated in his evidence that a buoy could not be seen more than a cable's length from the ship, and that the speed at the time was eight or ten knots, I do think the conduct of Mr. Callister most culpable; and I cannot understand how a person who is described as careful and efficient by the superintendent, and who appears to have been so up to the time of the unfortunate accident, should

have ventured a dangerous passage on a dark night, when he admits that he had no lights or leading marks, and that he had to direct his course by the appearance of the land. When entering or proceeding through a dangerous channel, a prudent man would slow his engines instead of expediting the speed of the ship, for it must be evident that there is little chance of saving a vessel when she strikes the rocks going 10 knots an hour, more especially if the wind was high when the vessel was wrecked, and had it not fortunately happened that the sea was tolerably smooth, many would, in all probability, have had to mourn the loss of their relatives and friends.

I must do Mr.Callister the justice to say that, in his evidence, he admitted that he never gave up charge; that he took the whole blame of the disaster upon himself; and that he did not attempt to criminate either the master or any other person.

I cannot, however, exonerate the commander of the ship in permitting the pilot to take the vessel inside the Skerries on such a night; he was out of pilot's water (the license only extending to the Middle Mouse), and knowing the pilot was going through a channel which he considered to be dangerous, and which his Admiralty chart would have satisfied him was so, he should have taken the command of the ship, which is usually done on quitting the N.W. Lightship, and from which place it is considered safe for the commander to do so, and have passed outside the Skerries.

[CAPT. BEECHEY'S REPORT: LOSS OF THE ANNIE JANE.]

The *Annie Jane* was a ship of 1,294 tons burthen, owned by Messrs. Holderness, of Liverpool. In August, 1853, she took on board a cargo, principally of iron, and embarked 385 passengers; and she had a crew of 35 persons in all (afterwards increased to 41), of which about one-half were Canadians. On the 24th of August she received her clearance from the Emigration-office, and put to sea on the following day; about noon she passed Rathlin Island; the wind was then fair, and the ship had shaped her course for Quebec. Almost immediately after putting to sea the ship was found to roll heavily, and the emigrants suffered much on this account. On the 26th, while running with the wind on the quarter, with whole topsails and topgallantsails set, the labouring of the vessel was so great that the three topmasts and the head of the mizenmast were carried away, and the master, at the request of the passengers, bore up, and returned by the South Channel to Liverpool, where he arrived on the 31st of August, after an absence of seven days.

The passengers, on their return, made great complaints of the over-crowded state of the ship, of the filthy condition in which she was, and of the manner of serving out the provisions, and of the ship in general; and several quitted her under the impression that she would never reach her destination. These complaints were heard in the proper quarter, and, as regards the provisions, adjusted by the owner with great liberality, paying each of the passengers a compensation for the injury he complained of, although it did not appear to the Emigration-officer that he was called upon to make the payments to the extent which he did.

The master of the ship, who had commanded many iron-laden vessels, being under a conviction that it was the cargo being stowed too low in the hold that was the occasion of the heavy rolling of the vessel, had part of it removed from the run and placed higher up. The mizenmast was scarfed, the topmasts replaced, and some rigging, which had been a year in use aud well stretched, was substituted for the former set, and the vessel was again ready. The crew were now strengthened by an addition of six seamen, which increased their number to 41, including officers, stewards, carpenters, &c.; and on the 9th of September, the passengers who had quitted the vessel being replaced by others, the *Annie Jane* again put to sea.

As before, she steered through the North Channel, with the wind at S.S.E., and everything seemed prosperous until the 12th, except that the ship was still found to roll and labour in a very unusual manner, much to the discomfort and suffering of the passengers. On that day (12th), at a little before midnight, the foreyard broke in the slings, and the foremost head broke short off; the vessel was

then rolling very heavily, and the wreck struck with such force against the ship, that her bow was stove in, and much water came in through the aperture. To clear the wreck, the heel lashing of the jibboom was imprudently cut to let the spar go overboard; but, in its so doing, as might have been expected, it broke the head of the bowsprit short off. The ship could now set no head sail whatever, and was forced to lie to. The wind then shifted to the S.W., and blew heavy; the ship laboured violently, the main deck was constantly under water, and the suffering of the emigrants was so great that they presented a memorial to the captain, and begged he would return; they were very urgent, and much expression of strong feeling evidently passed on both sides, during which the captain states he heard some one say that he would take the ship from him, and he replied that he would blow the first man's brains out who attempted it. At length he pacified them by assuring them that he would go to the nearest port; they were then in about 56 deg. N., and 11 deg. W.

On the 18th the weather moderated, and a crossjacksail was set for a foresail, on the stump of the foremast, and some staysails were set on both mainmast and foremast. These sails enabled the ship to veer round, which the master states he could not do before, and the wind having got to the N.W., the *Annie Jane* steered for Londonderry.

Unhappily, shortly after this occurred, the wind went round to the S.W., and the captain, fearful of approaching the land in the crippled state of the vessel, again put the ship's head to the westward.

The passengers mistook this evolution for a determination on the part of the captain to proceed to America, and became more than ever dissatisfied.

On the 19th, the wind again increased in violence; the maintopsailsheet gave way, and the Canadian seamen refused to go aloft to furl the sail. The captain endeavoured to shame them by setting the example of going up himself, but to no purpose; the sail split, and ultimately was blown away. The ship was now labouring fearfully in the sea. The master, on coming down from aloft, observed the main rigging so slack, that he fancied the step of the mast had given way, and, on examining the coating with the carpenter, it appeared that the mast had actually sunk. After the wreck the mainmast was examined, and the step was gone, and the heel of the mast was rubbed and frayed like a brush. The rigging was girthed in, but the ship laboured so violently, that the chain plates drew out of the side, and the mainmast broke off at the head. The lifeboat was washed away from the quarter, carrying the davits with it; it was impossible to stand upon the deck to do anything; the jury foreyard came down, the slings being chafed through, and, for want of being properly secured, was lost overboard. The ship was then in lat. 58 deg. N., and longitude about 9 deg. W., driving to the northward. About this time a sea struck the ship with such violence that it broke the spare loweryard on the deck of the vessel in three pieces; the chain cables, which were very improperly kept upon deck without any lockers, broke adrift, and at each roll of the ship surged heavily from side to side, and stove in the bulwark, and broke one of the Canadian's legs (this man was drowned in his bed); and the crew being unable to secure the chain it was unshackled, and allowed to run overboard. The accommodation for the passengers on deck was entirely washed away, and the female passengers not being able to endure the exposure of coming upon deck, the cabins were in a most filthy and pitiable condition below. The rolling of the ship is described as being greater than any of the seamen had ever before experienced, and in consequence of the straining of the frame, the seams of the planks opened, and the ship leaked so much that the passengers were put to the pumps. About the 24th, the weather became somewhat moderate, and the wind veered to the northward, and some sail was set upon the ship—a jib on the stump of the bowsprit, a topgallantsail on the foremast, a topmast studdingsail for a mainsail, the mizentopsail, and a staysail between the masts. With this sail, however, when the wind was free, the ship went about five miles an hour. She steered towards the coast of Ireland until the morning of the 28th, when the island of St. Kilda was seen, E. by N. about five leagues. At noon on that day, the wind shifted to the W.S.W., and at two o'clock the high land of the Hebrides was seen to leeward, Barra Head bearing about south 10 miles. The wind increased to a gale, and blew away all the sails but the foresail, staysail, and close-reefed mizentopsail. At 10 at night, the

light of Barra bore S.S.W. The ship would do nothing under the sail that was set, and her destruction was seen to be inevitable. It fortunately happened that the master descried a sandy bay, into which he determined to run the vessel, as the only chance of saving the lives of any part of the unfortunate emigrants and crew. She was accordingly wore round, and with great presence of mind in the master, her course was directed for this spot, which was viewed as a forlorn hope by all who witnessed that terrific night. She struck at some distance from the shore, and broached to; the sea swept over her decks, and washed away the house before the mainmast, the long boat, and about 100 passengers, and also three other boats that were on the poop, to which numbers of the passengers had clung as a last resource, and the scene that ensued is beyond description. The foremast unstepped, the heel of the mast went through the bottom, and, in falling, cut the side up; the mizenmast fell in the same way, also ripping the side clean up, and separating the after part of the vessel, the sea washed into the steerage and the cabin through the breach, and the ship heeling over, many of the emigrants were unable to get up from below and were drowned or suffocated. Added to this the poop fell in, and crushed many more. The ship very soon broke up, and all who did not succeed in getting aft to the vicinity of the stern frame were drowned, except four seamen, who were saved upon the stem of the vessel. The scene of confusion, and the manner in which the unfortunate emigrants met their death, has been described in the public journals, a copy of which appears in the evidence, and the truth of which has been attested by two of the witnesses examined on this occasion. I will merely add to that account the statement of the witness Morgan, who observes:—"The passengers broke through the bulkhead into the cabin, and were all screeching. A sea struck the ship; I was at once up to my middle in water, and in about two minutes all was quiet"—200 souls had, in fact, ceased to exist. The gale rapidly abated, and the morning of the 29th broke fine. The bay in which the awful catastrophe occurred was called Vatersay. The natives came down, and assisted the survivors to land from the wreck, of which the only parts remaining above water were the stem and the stern. On collecting the survivors together, it was found that, out of 385 emigrants, 321 had perished, and of the crew, consisting of 41, 5 had perished.

I have been thus particular in describing the progress of events as they occurred in this unhappy ship, as it probably seldom before happened that such a succession of misfortunes befell a ship in so short a time. On the first occasion of her putting to sea she lost her topmasts, the second, she lost her yards and sails, and then mast after mast was carried away; the ship laboured in an unusual and violent manner, rolling her waterways under at every lurch and tearing everything to pieces; the compass was unshipped, some of the spare spars were even broken upon the deck by the sea, and at the last, being unable to keep off the shore, she became a total wreck.

Upon a careful review of the evidence, which I have been at much pains to collect from the captain and the crew, as well as from the emigrants who were passengers in the vessel, there can be no doubt that the loss of the *Annie Jane* was occasioned by her having taken on board a cargo of iron, without due care having been observed in its stowage. The improper disposition of the weight caused the vessel to roll and lurch so violently, that she tore away her masts, and strained and leaked throughout, and being unable to keep off the land, in her crippled condition, she was ultimately wrecked.

Under these disastrous circumstances she had a crew, who, though in appearance were more than ordinarily good, were not sufficient in number for such a vessel, especially at such a season of the year, and were besides composed partly of Canadians, who, with very few exceptions, were afraid to go aloft at sea, and who either would not or could not understand the orders that were given. By the agreement (A.) there were 41 personsin all, of which nine were either mates, stewards, surgeon, cooks, carpenters, leaving only 32 seamen for a vessel of 1294 tons, of which 18 were Canadians, the greater part of whom, in the hour of difficulty, were nearly useless. It is stated in the evidence, that the refusal of this part of the crew to go aloft was the cause of the loss of the maintopsail, and, by one witness, of the mainmast, from the impossibility of furling the sail with such part of the crew only as went up.

It would also appear that, after the loss of the foretopmast and foreyard, on the 12th September, there was a great delay in getting up jurysails, and that six days elapsed before the vessel could be wore round to return towards an English port, during which time she was driving to the northward, which I do not think would have happened in a vessel properly manned. But in the absence of the ship's log, and of the chief officer, who was drowned, I am not disposed to attach too much importance to this apparent negligence. But there can be no doubt of the general inefficiency of the crew.

The numerous accidents which have occurred to passenger-ships from this country seem to render necessary some more stringent measures than have hitherto been in operation. From a return of the casualties which have happened to these vessels in the last year, it seems that out of 17 vessels which put into Cork damaged and leaky, 13 were laden with iron, and of those which put back to Liverpool seven-ninths had cargoes of the same description.

It is well known that this material forms a most dangerous cargo, unless it is properly stowed, and that no vessel will stand, without injury, the working and straining it occasions under such circumstances. By the evidence of the master of the *Annie Jane*, who has been many years employed in the Baltic trade carrying cargoes of iron, it will be seen that he is strongly of opinion that vessels which carry these cargoes should not be allowed to embark passengers, as the space required for them does not admit of the iron, when carried in large quantities, being stowed sufficiently high to render the ship easy at sea; and in the event of springing a leak, there is great danger of the lives of all on board. But without attaching to this opinion more importance than it may seem to deserve, I am disposed to insist on a more rigid supervision of the stowage of the ship. In the Stockholm trade, where deals are plentiful, the iron is raised and kept out of the extremities of the ship and away from the side, by planks and by balking the ship off, but in Liverpool deals are not so plentiful, and a mixed cargo prevents this being done; besides which, it appears that, with the present system, no specific plan of stowage can be followed, as the goods do not come down to appointment, and the ship being advertised to sail on a particular day, whatever cargo is ready must be shipped. The masters have frequently remonstrated against this practice, and also against vessels being brought too deep in the water with these heavy cargoes. I am aware that the vessels which embark passengers at Liverpool are so numerous that it is impossible for the present staff of Emigration-officers to exercise a satisfactory supervision in this particular; and, in consequence, I would strongly urge upon the attention of the Emigration Commissioners the propriety of appointing a public stevedore, whose duty it should be exclusively to superintend the stowage of the cargoes of all vessels engaged to carry passengers, and to render to the officer in charge of the port a rough statement of the manner in which each vessel's cargo is stowed; and when it appears to him that there is improper stowage, he should immediately represent it; and if it be not remedied, the clearing officer should withhold the certificate. The powers with which the Emigration-officers are armed at present are sufficient for this purpose, if they are freely exercised and the officers firmly supported.

Strictly speaking, it does not fall within the province of my duties to remark upon matters which may be considered as merely those of accommodation and comfort of the passengers; but as it was the desire of the Emigration Commissioners that the validity of the complaints of the passengers on these points should be inquired into, in so doing I am only complying with their wishes.

The complaint of the unduly crowded state of the vessel does not appear to have been well founded, and the improper and negligent issue of the provision occurred only on the first occasion of the vessel putting to sea, and for which the passengers were remunerated by the owners on their return to Liverpool. On the last occasion there was no complaint of this nature.

The vessel, however, does appear to have been in a disgraceful condition after she cleared the land, from the temporary nature of the water-closets; but this was increased by the reluctance of the passengers themselves to go upon deck, that their berths might be cleaned, which was even so great that the surgeon was occasionally under the necessity of fumigating the apartments to make them get up. To go further into this question would only be to open out the inconveniences

and miseries of emigrant ships. It may be impossible to remedy them all, but I shall offer in advance a few remarks which the present inquiry has suggested, as to what I conceive might and ought to be done to render these vessels more appropriate to the occasion.

The complaint of the passengers of the conduct of the captain in recklessly persevering on his voyage towards Quebec, after the loss of the foremast and bowsprit, appears to have had its foundation in the captain not choosing to declare his intentions to the emigrants, and in their ignorance as to what could be done, and was best to be done, for their safety in a ship so disabled.

It was under these circumstances that the petition of the emigrants was presented to the captain for the immediate return of the vessel to port, but which, the captain states, could not at that time be complied with, however desirous he might have been to acquiesce, in consequence of having no headsails to veer the ship until after the 18th, when it was done. On the 19th, however, the wind changed; and the master, fearful of approaching the land in the disabled state of the vessel, again put the ship's head to the westward. This was interpreted by emigrants as a change of mind in the master, and that he was determined to proceed to Quebec; and in consequence, they became outrageous after the promise they had received from him that he would proceed to the nearest port.

The master admits that he threatened to shoot the first man who should attempt to take the ship from him, and it is in evidence that he treated with contempt the memorial of the passengers urging him to return, and that he used the expression "Quebec or the bottom;" but all this appears to have been done under excitement, and with a secret determination to put the ship round when he could.

It would have been well if the master had explained to the emigrants his motives in putting the ship's head as they supposed towards Quebec, and if he had used more conciliatory language to them throughout, and made known to them the truth, if it was really his intention to return to port when he could do so in safety; and I certainly think it was his duty to return under the crippled condition of the vessel, and considering all other circumstances.

All the witnesses admit the firm and seamanlike manner in which, as a last resource, the master piloted the ship into that fatal bay; and we cannot but commend his judgment in the adoption of that alternative, rather than that of deferring the awful encounter by a vain attempt to keep off the shore; which, although it might have prolonged life a few minutes more, would, in all probability, have ultimately been the cause of the entire destruction of all on board.

The complaint of the very temporary and slight nature of the fittings does appear to have been just; and, from the evidence of the master it would seem that this is not an uncommon occurrence in vessels of this description, and that as soon as the vessel gets to sea the partitions come down with the working of the vessel. This should be remedied, and the water-closets especially should be more substantially built, particularly those appropriated to the females; which indeed ought not to be in an exposed part of the vessel. In the *Annie Jane*, the master states in his evidence that it was quite pitiable to see the women endeavouring to reach these places, getting drenched with the sea, and, to prevent exposure to the crew after they were thus washed away, resorting to the lower deck as an alternative, by which the ship was in a very filthy condition.

I am fully aware of the difficult nature of the duty the Emigration-officer has to perform; the responsibility of detaining a ship under such circumstances, when ready for sea, by refusing a clearance for the inefficient performance of particulars, is very great; still this responsibility should be incurred and fully authorised. I would suggest that whenever the clearing officer has any good reason to suspect the stability of the fittings, or the stowage of the cargo, or even the efficiency of the crew, either from their ignorance of the language or from any other cause, he be directed to refuse a clearing certificate, and until this is done, we cannot expect any diminution of the numerous complaints, and more serious casualties which have of late befallen vessels employed in the service such as that in which the *Annie Jane* was engaged.

These Reports are highly instructive, and most of the suggestions contained in them will meet the approbation of all owners who are not wedded to a system of false economy, and of all captains who have any regard for their reputation: it is also satisfactory to know, that while all the inconveniences necessarily attendant on a long sea voyage cannot be obviated, they may at least be considerably mitigated, since much that has been heretofore a cause of complaint among emigrants, comes within the provisions of the Passengers' Act, and that the powers with which the Emigration Officers are armed, are sufficient to enforce compliance with such arrangements as may be considered conducive to the comfort and welfare of those over whose interests they are appointed to watch.

In the first place, however, we wish to call especial attention to the crews of the *Tayleur* and *Annie Jane*. In this department the former vessel was manifestly deficient, even if it is allowed that the capabilities of each individual for the duties for which he shipped were such as they ought to have been, whether in the capacity of able or ordinary seaman. Of the seventy-one persons who signed articles, there were only forty-five, exclusive of the officers, who could, in the strict meaning of the term *crew*, be considered to come under that denomination; and it would be worse than useless to urge that, with the twenty-one stewards and cooks who were liable to be called upon to assist in the working of the ship in case of emergency, the complement of men was sufficient—for the majority of these stewards and cooks had never made a previous voyage, and consequently stood in the same predicament as passengers, who, however good their intentions may be, cannot, when they interfere in the duties of the seamen, do otherwise than impede and obstruct the work in hand, of the nature of which they are wholly ignorant. The Report states that the *Tayleur* was by the old measurement 1640 tons, and by the new measurement 1979: that there was 2516 tons of cargo on board, but that the supposed actual burden of the vessel was 3500 tons. The crew, reckoning three to every 100 tons, was certainly correct according to the old method of measurement, but we are at a loss to conceive why this method should be preferred in estimating the number of hands required, nor can we see the necessity of an Emigration Officer's inspection, if he is not permitted a discretionary power to over-ride "the usages of the port," when such usages are not consistent with the safety of those for whose particular benefit he is appointed to act. There are few persons having any acquaintance with nautical affairs, if called upon to give a disinterested opinion, but would say that twenty-one men in each watch in such a vessel as the *Tayleur* were far too few for the performance of the duties they might be frequently called upon to execute, and that in any sudden emergency on the open sea the consequences would have been equally, if not more disastrous than those that occurred at Lambay. We certainly agree with the recommendation of Capt. Walker that four men to the 100 tons should be adopted as the standard, and this, we take it, ought to be exclusive of stewards and cooks; had such been the case in the present instance, the *Tayleur* would have been provided with from thirty to forty men in each watch.

The Report of Capt. Beechey shows that the *Annie Jane* was not only under-manned, but, to augment this evil, the number of "incapables" were, in proportion to the number of hands shipped, greater than could have been anticipated. We are not aware of any physical disabilities which render Canadians incompetent for sea service, but that they are not in general esteemed to be good seamen is certain; in this position, however, we would place Lascars (who, though very serviceable in the regions to which they are natives, are by no means adapted to navigate vessels in high northern and southern latitudes) and all foreigners who cannot understand the language in which the orders are given. Before we leave this subject, we would further suggest, that it would be highly desirable to settle definitively, and as early as possible, the question of manning ships, not only where passengers are concerned, but in every other case, for it is notorious that vessels are daily leaving our ports disgracefully short-handed, in consequence of which the work can never be cheerfully performed—while the Captain and officers are exposed to continual annoyances, and the men are set down as "mutinous rascals."

In a previous number (p. 97—100) we drew attention to the negligence that exists in the adjustment of the compasses as well as to the deficiencies in this department which require supervision. We are happy to find Capt. Walker urging the necessity of more care being bestowed on this branch, and that he also particularly recommends the more extensive use of the azimuth compass—an instrument that is known only by name in many of our first-class ships. The operation of adjusting the compasses of the *Tayleur* took place "two months prior to sailing, and before the cargo was taken in." Such, we beg to observe, is the rule and not the exception—even up to the moment at which we write; and it has often been a matter of surprise to us that accidents have been as few as they are. We feel warranted, in stating, from what has fallen under our own observation, that the paucity of disasters, arising from ignorance and negligence combined, is due rather to good luck than good management.

We might extend our remarks on these Reports to a much greater length did space permit, but the Officers to whom the investigations were entrusted have performed these duties so ably, that a careful perusal of the results of their labours, if followed by a judicious carrying out of their suggestions, will do good service to the *Mercantile Marine*, and obviate the necessity of a Parliamentary Committee recommending the insertion of new clauses to Acts already passed, which, instead of being an efficient remedy for the evils complained of, may very possibly include provisions which will not provide, and consequently tend only to make "confusion worse confounded."

In dismissing the subject, we would say to Owners,—be not too eager to cram your ships with a large number of individuals, to the prejudice of health and morality; let the emigrants feel assured, by the comforts and conveniences which have been provided for them, that in the arrangements they held a place in your thoughts paramount to mere goods and chattels, and you will find a liberal policy is that which in the long run will be most remunerative. On Captains we

would urge, that, in the day of trial and in the hour of danger, it is quite possible to be firm, and yet conciliatory, with those whose safe-conduct is committed to your charge—and further, on a point which touches your reputation as skilful navigators, *make yourself thoroughly conversant with the tidal currents on our coasts—the changes to which they are subject, and the laws which govern their force and direction;—and do not neglect to use the lead.*

M.

HONORARY REWARDS.

Captain Frederick J. Organ.—Barque Cuba.—Captain ORGAN has been presented, by Thomas Frost, jun., Esq., of Liverpool, owner of the late *Bona Dea*, with a handsome and valuable gold watch, with an inscription on the inner case, as follows:—

"Presented by the Owners of the barque *Bona Dea* to Captain F. J. Organ, of the barque *Cuba*, in testimony of his humane conduct in saving the lives of officers and remainder of the crew from the wreck of the former vessel. On the 4th Feb., 1854. Lat. 45° N., long. 24° W."

Mr. Frost not only behaved in a most liberal manner to all the unfortunate sufferers in this affair, but he has also given £21, to be distributed among the crew of the barque *Cuba*, for their exertions and attention to the sufferers taken off the wreck of the *Bona Dea*, viz:—Chief officer, £5; second officer, £2; the rest of the crew, fourteen in number, £1 each.

Captain Burke and the brig Velocity.—Captain BURKE having fallen in with the Prussian barque, *St. Johannes*, which was in a most disabled state, the most strenuous exertions were used by the crew of the *Velocity* in saving the lives of those on board the distressed vessel. The state of the weather rendered it impossible to assist them at first; but Captain Burke very laudably remained by them 48 hours, until he could do so, and he had at length the satisfaction to rescue and receive them on board his own ship. The people of Halifax, in approbation of his conduct, entered into a subscription to reward it; and the amount was presented to him, for himself and crew, with an appropriate address, at a meeting of the subscribers, held in the Merchants' Exchange-room, Halifax. After the address was presented, the chairman handed Captain Burke three cheques on the Bank for the amount of the subscription, one for himself, one for his mate, Mr. Nicholson, and the third to be divided amongst his crew. Captain Burke briefly acknowledged the testimonial, and "disclaimed any expectations of pecuniary reward for his exertions, deeming it a sufficient recompense in being able to reflect that, notwithstanding the great difficulties and dangers attendant upon the rescue, he was finally successful, under Providence, in accomplishing the end, after lying by the unfortunate vessel for 48 hours, in a heavy sea and stormy weather."

CERTIFICATE CANCELLED.

A charge of fraudulently using an altered certificate of discharge having been preferred against Joseph Middleton, and he having been convicted before the Lord Mayor of the above offence, under section 101 of the Mercantile Marine Act, the Board of Trade have, in pursuance of section 4 of the Mercantile Marine Amendment Act, determined to cancel his certificate of competency as master.

LEGAL DECISIONS.

Police Office, Demerara, Feb. 1.—*Neglecting to send a Sick Seaman to the Hospital.*—William Bellis, master of the ship *Sandbach,* appeared to answer a charge preferred against him by Mr. W. E. Pierce, as Secretary to the Directors of the public hospital, of having, on or about the 1st of October, 1853, omitted to send to the public hospital of Demerara and Essequebo, in the city of Georgetown, and county of Demerara, a seaman named Francis Cook, within twelve hours after he had been taken sick on board of the *Sandback,* or without his having been attended on board by a duly-qualified medical practitioner. Defendant: I was not on board of the ship the whole of the time. As soon as I knew he was sick he was sent off.—Magistrate: the man asked the mate to send him to the hospital, but the mate shrugged up his shoulders, and turned away without replying. Defendant: that was contrary to my orders. The mate was ordered to send them away immediately on their getting sick. Magistrate: in this case your orders were not complied with, and it is proved that the man had been sick upwards of twelve hours before he had been sent to the hospital. The 4th clause of Ordinance No. 19, of 1850, provides that—"In all cases where any seaman on board of any such vessel as aforesaid shall be taken ill or meet with any injury requiring medical or surgical aid, the captain, master, or other person in charge of such vessel, shall send such seaman within twelve hours after he shall have been taken ill or have met with such injury to the public hospital of Demerara and Essequebo in Georgetown, unless such seaman shall refuse to be sent, or unless he shall be attended on board by a duly-qualified practitioner; on pain, in default thereof, of such captain, master, or other person, forfeiting and paying a fine of not less than 10 dollars, nor more than 23 dollars." In this case the man did not refuse to be sent; on the contrary, he demanded to be sent, and was refused. I, therefore, find you guilty of the offence, and sentence you to pay a fine of 20 dollars and costs, 1 dollar 60 cents.—*Royal Gazette.*

A Master sentenced to Imprisonment for Misconduct.—At the High Court of Justiciary, William Cardno, shipmaster, Peterhead,

was charged with breach of the act 13 and 14 Vic., cap. 93, for maintaining discipline in the Merchant Service, in so far as having sailed from Peterhead as master of the brig *Ranger*, of that port, for the seal and whale fisheries in the Greenland seas, he, on several occasions, while in a state of intoxication, endangered the safety of the ship by conducting the vessel in a reckless manner, issuing improper orders, failing to issue necessary orders, &c. He was also charged with twice assaulting the first mate, who, with the crew, found it necessary on several occasions to take the management of the ship out of his hands. The prisoner pleaded guilty of the first charge, which plea was accepted, and certificates of former good character were received in his favour. The court sentenced him to be imprisoned in the prison of Peterhead for five months. This was, we believe, the first case under the act recited which has been tried in Scotland.—*Greenock Advertiser*, Feb. 24.

ADMIRALTY COURT.—March 17.—*Voluntary Payment by a Master of additional Wages to a Crew reduced in number not binding on Owners.*—This was a suit for the subtraction of wages, promoted by three seamen, named Hart, Stafford, and Snelson, against the ship *Araminta* and her Owners. The vessel sailed from Liverpool on the 20th of June, 1852, bound to Geelong, thence to Bombay, and back to England. On arriving at Geelong an arrangement was entered into between the master and crew under which they went to Ballarat diggings, and, having obtained a considerable quantity of gold dust, 15 men out of 30 returned. The master, it was said, then promised that if they would work the ship short-handed, he would divide among them the wages due to the deserters on the outward voyage, and which amounted to £8 10*s*. each man. He assured them that it should be in addition to, and not in diminution of their wages, and paid them the money. On the arrival of the ship at Liverpool the Owners deducted from the wages due to them the sum thus paid by the master, alleging that it was an advance, in consequence of which the present proceedings were instituted.

Dr. Lushington delivered judgment to the following effect:—The present suit is brought for the subtraction of wages, and it is necessary, before I state the legal question which has been discussed at the bar, to settle, so far as is practicable, what are the facts of the case. The court, in so doing, will proceed according to its accustomed rule, according to the *allegata et probata*, paying, of course, due consideration to what may come out upon interrogatory. I have before me the libel, the depositions of three witnesses examined thereon, the mariners' contract, and the log-book, and nothing more. The suit is brought by three seamen; there is no substantial difference in their cases. In June, 1852, they entered into articles, whilst the ship was at Birkenhead, to proceed on a voyage to Geelong in Australia, and afterwards to any parts in the China or Indian seas, and back to England, the whole voyage not to exceed three years. The *Araminta* is of the burthen of 845 tons; she took out from 300 to 400 emigrants; the crew consisted of thirty hands, but there were ten supernumeraries, in consequence of

the number of emigrants. They were to be discharged at Geelong. The vessel reached Geelong on or about the 4th of October, in the same year, and, according to the evidence, somewhere about that time the master offered the crew either to pay them off in Geelong, and ship them again at the rate of wages usual at the port at that time, or that they might go with him to the diggings for a certain period of time. An agreement was at last entered into by which it was settled that the expenses should be paid on behalf of the ship, that one-third of the gold should be appropriated for the benefit of the ship, and the rest should be shared amongst the master and crew, according to a fixed scale. It was also agreed that the wages should be stopped from October 18, during the absence of the crew from the ship. The crew went accordingly, worked at the diggings; gold to the amount of 7lbs weight was received by the master for the benefit of the Owners. Nearly half the crew refused to return to the ship; about fifteen did return. The master proposed to the men that did return, to navigate the ship to Bombay without additional hands, and he offered, if they consented to do so, to pay them the money amongst them that was due to the men who had deserted. It appears that seamen for the run from Geelong to Bombay could not be got for less than £40 to £50 each. The money that would have been due to the seamen that did desert was actually distributed amongst the crew, and it is sworn by the witnesses that it was paid in addition to the wages. The gold was distributed about the same time. The ship then sailed to Bombay, having left Geelong on January 22nd, the crew being fifteen hands only, including the master. That voyage lasted about eleven weeks, the cargo of coals was then discharged and sold, a cargo of cotton and other articles taken in, and, with the addition of twenty-two Lascars and one Englishman, the voyage to Liverpool was accomplished, where the ship arrived on the 11th of September, 1853. The men claimed their wages, the Owners claimed to deduct two months and twenty-eight days at the diggings, and also the sum of £8 10*s*., which was the amount distributed by the master as the proportion due to each able seaman of the wages forfeited by those who deserted at Geelong. The mariners assented to the account as made out by the master, with the exception of this £8 10*s*. The only question therefore in the case is, whether the Owners are entitled to deduct this £8 10*s*. from the amount of wages due to them. The court is relieved from any consideration as to the diggings, for that arrangement has been homologated by the Owners; they have taken their share of the gold, and they have deducted their wages during the period the men were at the diggings. There is a very material difference, in fact, between this case and all those which have been cited at the bar. This is not a question to recover any amount stipulated to be paid, in addition to wages; it is a question whether an amount actually paid in addition to wages could be the subject of deduction. In proceeding to ascertain the exact state of the facts, I will notice that questions have been put to the witnesses as to whether the master, in proposing to go to the diggings, and with respect to all the arrangements relative thereto, did not act under compulsion. All these interrogatories are negatived. The strong probability is, that

he so acted under the apprehension that his crew would desert either from the temptation to go to the diggings, or for the sake of the very high wages then given at Geelong for sailors to man ships proceeding therefrom. But whatever may be the truth in this respect, it does not appear to me, for the reasons I have in part already stated, to have any bearing on the present question of law, and for many reasons—first, that the Owners have substantially affirmed that transaction; and, secondly, because the allotment of the forfeited wages is a distinct and separate matter altogether. As far as the evidence extends, this was a voluntary offer on the part of the master, and in consideration of the crew, only fifteen in number, undertaking to navigate the vessel to Bombay, without additional seamen—a proceeding which manifestly entailed extraordinary labours on them, and was productive of great saving to the Owners, for the hire of seamen at Geelong must have been most exorbitant. The only further evidence in this case, if I may so denominate it, is the log. There is no plea, and consequently the master was not examined on the part of the Owners. With respect to this log, I think it may be disposed of in a very few words. It is headed "Official Log-book," kept distinct from the ordinary ship's log, and purports to be made and kept in pursuance of the Mercantile Marine Act of 1850. The special object is to record matters relating to the character and conduct of the crew, and so stated indeed in the act of parliament. The first objection to this log is with regard to the transactions when the vessel arrived at Geelong—there it is wholly silent. There is an entry after the return of the crew to the ship, which date is under the entry of January 18th, 1853. It refers to the return of the crew to the vessel, but is wholly unimportant as relates to the transaction of forfeited wages. Then there is a subsequent entry of October 13, 1852, namely, some three or four months before the date of that entry which I have already commented upon. This shows the gross irregularity of this log; nor in this, nor in the subsequent entry of January 15, 1853, is there any matter of importance to be found at all. Again, on January 23, 1853, it is said that Henry Stafford refused to work, but this too has nothing to do with the present case, nor is there to be found one single syllable in the remainder of the log that has any reference to the subject of the present suit. I may further observe that, with the exception of two deaths, the log is written by the master alone; there is no witness to any part, though if there had been desertion of a part of the crew, or misconduct, it ought to have been attested if possible; and, if not, the want of attestation ought to have been explained. Now this document appears to me to be wholly worthless and irrelevant as relates to the present inquiry. Then I must take the state of facts to be that the master voluntarily distributed the forfeited wages amongst the crew from Geelong to Bombay. I have used the expression "voluntarily," because I think the effect of the evidence is that the crew exercised no compulsion—no compulsion whatever—towards him, though, perhaps, in another sense of the word, such payment was not voluntary; and the more apt expression may be, and the one nearest the truth, that he was compelled by circumstances to make that payment. However, I have perhaps dwelt too

long upon this point, because I strongly incline to the opinion—indeed I entertain no real doubt upon it—that if this were a contract for any reward beyond the wages stipulated for in the mariners' contract, it would not matter whether the contract was compulsory or voluntary; it would, in either case, be illegal, and such is the effect of all the authorities cited. In one respect only do I wish to guard myself—that is, I do not wish it to be inferred, from anything I now say, that mariners having completed the voyage outwards are compellable to make the return voyage when the number of the crew is so small that risk of life may be incurred. I agree, then, in thinking that if this were a contract made during the voyage—that is the essence of the case, and distinguishes it from one of the cases cited and relied upon at the bar—it would be void for want of consideration, according to the expression of Lord Ellenborough in "Still *v.* Meyrick," 2 Campbell, and in accordance with all the other cases, though Lord Ellenborough thinks it right to place his judgment upon the ground of want of consideration. I have now to decide how far this law as to contracts applies to deduction. Generally the deductions claimed from mariners' wages are advances of money or slops, and justice clearly requires that they should be deducted. This is the practice, though I am not aware that it stands on any particular authority, or that any particular rule has been laid down on the subject. But I have now to deal with a payment, and not a contract, and I am of opinion that the payment itself was illegal, and I apprehend that the money might be recovered by the Owners by action, and for this position I refer to Mr. Smith's "Mercantile Law," and the cases there cited. Now, then, if the Owners can recover this money by action, then the question is, ought I to leave them to their action, or to allow them the deductions? I can perceive no satisfactory reason why I should put the Owners to this inconvenience, nor why I should not allow a deduction of the moneys illegally advanced. I will further observe, that I think it the duty of the court to act up to the spirit of the law—the spirit of that law which has considered all such payments and contracts illegal; and I think I should fail in so doing if I in effect gave the mariners the money first, and left the Owners to the empty remedy of an action against the mariners—for an empty remedy it would be. If the mariners got possession of it the chance of the Owners recovering it would be but small indeed. Now, entertaining this opinion, I must mention another consideration, though it is not requisite to go into detail. I mean the provisions of the statute in this matter, the 6th and 7th Vic., c. 112, s. 9. It is perfectly clear, from the words of that statute, that this appropriation of forfeited wages is a violation of the statute itself; therefore, if I entertained any, the slightest doubt, as to whether it was an illegal contract or not, still by the very words of the statute I should be compelled to come to that conclusion. Now, for all these reasons, I think I must pronounce that the deductions must be allowed, But with regard to the question of costs, I certainly shall give none; for I think it was an extreme hardship on these mariners to have to navigate this vessel from Geelong, for three or four months, with less than half the original crew, to the port of Bombay, and to receive no additional remuneration.

COURT OF QUEEN'S BENCH.—*Improper Stowage.—The Sir Thomas Gresham.—M'Andrew v. Lidgett and another.*—The plaintiff is a merchant of New York, and the defendants, Messrs. Lidgett, of London, and Ledman, of Bridlington, are the owners of the ship *Sir Thomas Gresham.* The action was brought to recover damages for injury which 287 barrels of currants sustained, by reason of the improper stowage of the cargo. Several casks of turpentine which formed a portion of the cargo leaked, which, getting to the fruit, necessarily damaged it.

According to the plaintiff's case, it appeared that he shipped the currants on board the *Sir Thomas Gresham*, at New York, for London, consigning them to M'Andrew and Son. The barrels were stowed in the lower after-hold in the run. The ship arrived in the London Docks in the course of September, and it would seem that the dock authorities, acting under the impression that some damage might arise from an outbreak of fire, ordered the ship out of the dock into the river, where she was discharged. It then transpired that the barrels of currants had been seriously damaged by turpentine, some casks of which had been stowed between decks, and had leaked. The spirit had impregnated the fruit to a considerable extent. On its being removed to Nicholson's wharf attempts were made to relieve it of the offensive odour. They failed, however, and the currants were sold at a loss of more than 200*l.* It was contended that, had ordinary care been used in stowing, the damage would not have occurred; that it was a negligent act to stow turpentine over the barrels of currants, and to fill up the spaces between the casks of the former with oilcake, so as to make up the stowage; that it was of a heating character, and likely to act upon barrels of turpentine, and cause them to leak.

Mr. Sergeant Shee addressed the jury for the defendants, and contended that they were not guilty of any negligence. The usual and proper care had been taken in stowing, and there was no evidence to show that it had been otherwise. He would call witnesses who would satisfactorily prove that the barrels of currants were stowed far away from the turpentine, and that if the latter had leaked, which had not been established, it would have been utterly impossible to have dropped upon the fruit. The learned counsel then alluded to the bill of lading, and submitted that there must be some act of negligence proved on the part of the defendants, before they could be held liable for the amount. He would show that greater care could not have been taken in loading, and that the loss did not result from any omission of duty by his clients.

Captain Hooper, the master of the *Sir Thomas Gresham*, was then examined, and having given a description of the cargo, said that the barrels of currants were upon bags of oilcake on the run of the ship, wood dunnage being below them. There were six or four casks in the upper hold. The turpentine was separated from the oilcake by wood dunnage. There were three tiers of casks of turpentine in the upper hold; there was none in the upper hold on the currants. Employed an old-established stevedore at New York to do the stowage. When the ship arrived went into London Docks. Was there five days, and

then went to the buoy at the entrance in the river. Believed the authorities were apprehensive of fire. She was discharged by the company's servants. Went into the hold repeatedly where the currants were. It was utterly impossible for any of the turpentine to have got to them; they were six or seven feet from where the turpentine was stowed. Before they were taken out of the hold there was no sign of turpentine leaking in any way. The entire mass of turpentine was stowed before the oilcake came on board. Was not aware of the heating character of the oilcake. It was filled up as broken stowage. When the passage was about one-half over, noticed a smell of turpentine on board. After they arrived, and after the hands had been down below, they would fall down like drunken men from the effect of the effluvia which prevailed; when he took the oilcake from the casks it was warm. George West said he had to attend the discharging of the cargo of the *Sir Thomas Gresham*. Saw the barrels of currants; they were stowed in the after run. Observed no turpentine about them. Was in the ship while the currants were discharging; as they came from the hold did not see that they had any turpentine about them. The turpentine was more towards the main hatchway. The currants were well stowed. No complaint was made to the Dock Company. The currants looked as well and good as when they left their native place. Saw them taken out of the hold, and there was no turpentine that he could see in the place. The upper deck was rather wet with turpentine, as if it had dribbled out of the casks. Bower, servant to the London Dock Company, said he had been thirty years at sea, and had seen how the currants and turpentine were stowed. If the turpentine casks had leaked, it was quite impossible for it to have gone to the currants, and if it had leaked upon the deck it would have gone down the scuppers. Saw the casks of currants when discharged, and did not notice any leakage of turpentine over them. To all appearances they were in good condition. The turpentine was between decks, and the currants below. An extensive leakage would make its way possibly through the deck to what was below. The turpentine was stowed between the fore and main hatchway, and the currants full forty feet abaft. John Williams, cooper, at the London Docks, went on board the *Sir Thomas Gresham* while she was being discharged. Noticed the condition of some of the casks of turpentine; saw they leaked, caused by the hoops slackening and the wood shrinking. The wood was not properly seasoned, and that would account for its shrinking. Heat would cause the wood to shrink, if not seasoned properly.

Lord Campbell said, the only question whieh the jury had to determine was whether the damage arose from improper stowage. He could not understand from what other cause the loss was attributable if not to improper stowage. They had heard that the casks of turpentine were likely to have been heated by the oilcake, and so have been made to leak. It was for the jury to decide.

After a brief consultation, the jury found a verdict for the plaintiff—damages £222 19*s*. 7*d*.

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from February 24, *to March* 25, 1854.

Electric Telegraph from Orfordness to Holland.—Buoys marked with the words "Electric Telegraph" are now laid down in the line of direction of the Submarine Cable, and it is desirable that no vessel should anchor within a quarter of a mile to the northward or southward of the line of the said buoys, which line is from the Orfordness High Lighthouse E.S.E. by compass.

New Lighthouse on Loophead, West Coast of Ireland.—A new Lighthouse has been erected on Loophead, Co. Clare, at the north side of the mouth of the river Shannon, from which a light will be exhibited on the evening of the 1st of May, 1854, and which thenceforth will be lighted during every night from sunset to sunrise. Specification of the position and appearance of the Light:—

The new tower on the point of Loophead, erected 30 feet eastward of the building from which the Light is now shown, is in latitude 52° 33′ 38″ N., and long. 9° 55′ 54″ W., bearing

From Kerry Head	N.E. by N.	distance	8¾	nautical miles.
„ Mucklaghbeg (Tralee Bay, West side)...	N.E. ½ N.	„	14	ditto.
„ Tearaght Rock ...	E. by N. ½ N.	„	40	ditto.
„ Hag's Head	S.W. by W. ¾ W.	„	29	ditto.

The Light will have the same characteristic appearance as that heretofore in the old tower, a Fixed Bright Light, 277 feet above the level of the sea at high water of spring tides—illuminating an arc from S.E. by E. around seaward to N.E. by E. ½ E., and in clear weather will be visible at a distance of 22 miles. The tower is circular, 75 feet in height from its base to top of the ball over dome, and below the level of the projecting gallery is colored White. On exhibition of the new Light, that heretofore in the old tower will be discontinued, and the old tower removed. Bearings stated are magnetic—Var. 29° 15′ W.

Boulmer Bush Shoal.—A Line of Light colored Red is now shown, in a northerly direction from the Coquet Lighthouse. And masters of vessels, and other persons navigating off the coast of Northumberland, are to observe that the said Line of Red Light leads about one-half mile to the eastward of the Boulmer Bush Shoal, and they are hereby cautioned, when standing in near that Shoal, to tack, should the Light on the Coquet become dim, as the Red color may not, under all states of the weather, show distinctly at the distance at which the Boulmer Shoal lies from the Coquet Island.

New Lighthouse on Cape Carbon (Algeria).—A Lighthouse, with a Revolving Light, has been erected on Cape Carbon, at the entry and on the west side of the Gulf of Bougia, and from the 1st of March, 1854, the Lighthouse will be lighted up every night from sunset to sunrise. The Lighthouse is situated in lat. 36° 49′ N., and in long. 5° 10′ 2″ east of Greenwich. Elevation 722 feet above the level of the sea, and 33 feet above the platform where the building is situated. Its interval of revolution is once in every minute. The Light is seen at a distance of 27 marine miles, and, when the weather is clear, will be visible at 40 miles. The red fixed Light, which at present points out Cape Carbon, will disappear, when the Lighthouse is lighted up; the Red Light will then be removed to the roadstead of Bougia, and placed on Ab-del-kader Point, to replace on the 1st of March the present Light.

Girdler Sand.—A spit of sand having extended itself from the Girdler Shoal in the Princes Channel, in a south-easterly direction, a Buoy colored Red has been placed at the extremity thereof, in 3¾ fathoms at low water spring tides, with the following marks and compass bearings, viz:—

Northdown Tower, the width of its Base, on with the east end of the Buildings at Margate East Cliff	S.S.E. ¼ E.
Minster West Mill, its width open Westward of Powell's Belfry	S. ½ E.
Shingles Buoy	E. ¼ N.
Tongue Light Vessel	S.E. by E. ¼ E.
North Tongue Buoy	S.E. ¾ S.
Girdler Light Vessel	W.N.W.

Wreck off Harwich.—A Green Buoy marked with the word "Wreck," has been placed twenty fathoms S.E. by E. ½ E. from a vessel sunk on the flat of the Naze.

The Buoy is in six feet at low spring tides, with the following marks and compass bearings:—

The round-topped tree at Walton, twice its apparent width open northward of the Naze Tower	N.W. by W. ½ W.
Harwich Church Tower just touching the High Lighthouse at that place...	N. by E.

Cattegat.—The Lightship in the Drogden (Dragöe) took up her station and showed her Light on the evening of Thursday, the 28th Feb. The Lighthouse in the Lessoe Channel was moored at her station, and showed her Light on the evening of the 1st of March. The Lightships on the Copperground, and the Anholt or Knobben Reef, on the 2nd March. And the Lessoe Trindel, the 4th March.

Mark on W. Coast of Fyen.—Little Belt.—For the guidance of vessels passing through the Little Belt, a mark, in form of a tower,

20 feet high from the ground, and 40 feet above the level of the water, has been placed on the west coast of Fyen, half a mile (2½ miles English) north of Assens, in 55° 18′ 25″ N. lat., and 9° 53′ 48″ E. long. of Greenwich. Kjerte church in a line with Sandager church. It will be kept white, and is furnished with a Red "Balloon" on the top.

Wreck in the Bristol Channel.—A Green Buoy, marked with the word "Wreck," has been placed 25 fathoms N. by W., from a vessel sunk in the Bristol Channel. The Buoy lies in 7 fathoms at low water spring tides, with the following mark and compass bearings, viz:—

Blackmore Cottage	E. ½ S.
Clevedon New Church	S.E.
Worle Old Mill, on with St. Thomas' Head...	S.S.W. ½ W.
Grounds Light Vessel	W. ½ S.

NAUTICAL MEMORANDA.

Sandwich Islands.—Duties leviable at Honolulu, payable in coin.—Five per cent. *ad valorem* on all goods, wares, and merchandise, except liquors. Spirituous or fermented liquors landed at any ports of these islands are subject to the following duties—viz., rum, gin, brandy, whiskey, &c., of more than 27 per cent. and less than 55 per cent. alcohol, 5 dols. per gallon, if more than 55 per cent. alcohol, 10 dols. per gallon; wines, liquors, cordials, &c., except Claret, Bordeaux, Champagne, and similar wines, of not over 18 per cent. alcohol, 1 dol. per gallon; claret, &c., of not less than 18 per cent. alcohol, malt liquors, and cider, 4 per cent. *ad valorem.* Products of the Whale Fishery may be transhipped free from any charge of transit duty. Whale ships are allowed to land goods to the value of 200 dols. free of transit duty, and 1,000 dols. worth additional, subject to a duty of 5 per cent. *ad valorem*, without being liable to pay any tonnage dues; but if they land more than 1,200 dols. (including the 200 dols. free of duty), they shall be subject to the same charge and liabilities. *Pilotage and Port Charges.*—Pilotage to anchor outside the harbour 10 dols., health certificate, 1 dol.; when vessels anchor in the harbour 20 cents a ton register, buoys, 2 dols., clearance, 1 dol., pilotage in and out, 1 dol. per foot each way; when vessels anchor outside the harbour, and land, tranship, or take on board any cargo, landing or taking on board more than two passengers, 5 cents per ton register, buoys, 2 dols., clearance 1 dol. When vessels touch at the port for refreshments only, and neither landing or receiving any cargo, taking or leaving more than two passengers, they shall pay but 10 cents per ton register, but if they discharge or take cargo, leave or take more than two passengers, they shall pay 20 cents per ton. On account of calms, vessels are sometimes towed out and in at the expense of 5 dols. a boat. Ballast can be

obtained at about 5 dols. per ton, delivered on the wharf. *Wharfage.*—Vessels at the government wharves are charged 2 cents a ton per diem; wharfage for merchandise shipped or landed from vessels lying in the stream 25 cents a ton.

The Sandwich Island papers are strongly advocating free trade in the islands, by which is meant the removal of all port charges whatever. They wish Honolulu to be as perfectly free a port as Tahiti. They do not ask for the abolition of the five per cent. import duties.

The following is a comparative statement of port charges, as paid by the schooner, *Royalist*, of 141 tons:—

Sandwich Isles—Harbour master's bill at Honolulu 3 dollars, tonnage dues, 15 cents per ton, 21 dols. 15 cents., entry stamp 50 cents., permit stamp 50 cents., manifest stamp 1 dol., ten days' wharfage 22 dols. 60 cents, twenty-four barrels of water 3 dols, pilotage out 21 dols. 50 cents, manifest stamp 1 dol. clearance stamp 1 dol.—total, 75 dols. 25 cents.

Port charges at Tahiti.—Pilotage in and out of Papaeti, on *Royalist*, 141 tons—no other being made, though the vessel laid alongside the wharf about seven days, discharging and taking in cargo and passengers, and took in water from the Government water pipe—14 dols. 40 cents.

NAUTICAL NOTES.

The Ship Lightning.—The *Lightning* was built by Mr. Donald M'Kay of Boston, for Messrs. James Baines and Co.'s "Black Ball" Line of Australian Packet-ships, and is the first ship ever built in the United States for an English house. Her leading dimensions are as follow:—Length of keel, 226 feet; length on deck, 245 feet; breadth of beam, 44 feet; depth of hold, 23 feet, including 7½ feet height between decks; and registered tonnage 2,093 tons. She has sharper ends than any clipper ever built in the United States, and her lines are decidedly concave. At the load-displacement line, a chord from the extreme of the cutwater to the rounding of her side would show a concavity of sixteen inches, the curved line representing the segment of an ellipsis. The stem rakes boldly forward, and the bow flares as it rises, but preserves its angular form to the rail, and is there convex on its outline. Her bulwarks are 7½ feet high, and she has a full poop deck 90 feet long.

The following are the dimensions of her masts:—Fore 86 feet long, diameter 37 inches; main, 90 feet long, 38 inches diameter; mizen, 79 feet long, 30 inches diameter. Her foreyard is 87 feet long; main, 95; and crossjack, 72 feet.

The following is an abstract of the log of the *Lightning*, from Boston to Liverpool:—

Feb. 19.—Wind W.S.W. and N.W., moderate; all plain sail set. Distance run, 200 miles.

20.—Wind N.N.E. and N.E., strong breezes and snow-storms; lat. 43.5 N. long. 59.25 W. Distance run, 328 miles.

21.—Wind E.S.E., with snow-storms; lat. 41.30, long. 57. Distance run, 145 miles.

22.—Wind E.S.E., a gale, with high cross sea and rain; lat. 42.5, long. 54.45. Distance run, 114 miles.

23.—Wind N., strong gales, and E.S.E., moderate; lat. 42.45, long. 52.44. Distance run, 110 miles.

24.—Wind S.E., moderate; lat. 46.30, 47.45. Distance run, 312 miles.

25.—Wind E.S.E. and S.E., fresh breeze and thick weather; lat. 49.15, long. 43.20. Distance run, 285 miles.

26.—Wind W.S.W., moderate; lat. 51.5, long. 37.19. Distance run, 295 miles.

27.—Wind W.N.W., moderate; lat. 52.3, long. 30.48. Distance run, 260 miles.

28.—Wind W. and W.N.W., steady breezes; lat. 52.38, long. 22.45. Distance run, 306 miles.

March 1.—Wind S., strong gales; bore away for the North Channel, carried away the foretopsail and lost jib; hove the log several times, and found the ship going through the water at the rate of 18 to 18½ knots per hour; lee rail under water, and the rigging slack; saw the Irish land at 9.30, p.m. Distance run in the twenty-four hours, 436 miles.

2.—Wind S., first part moderate, latter part light and calm. At noon abreast of Tory Island.

3.—Light winds and calms; at 7, a.m., abreast of Innistrahull; and at noon off the Point of Ayr.

4.—Light S.E. winds and calms; at 7, a.m., off the Great Ormshead; and at noon took the pilot, off N.W. Light-ship.

Caution to Refractory Seamen.—Cape of Good Hope, Dec. 1.—In consequence of the frequent offences committed by seamen at this port, a Government notice, containing the following caution, has just been issued by direction of his Honour the Lieutenant-Governor:—

1.—Seamen sentenced to imprisonment with hard labour, under the General Merchant Seamen's Act, and the Mercantile Marine Act, 1850, are liable to be sent to the convict stations, there to be worked upon the roads. These stations are about 60 miles distant from Cape Town, and the discipline is of the most rigid description.

2.—The following are the hours for labour, meals, and rest, which are never departed from, except where extra labour is awarded for offences committed at the station:—4 months.—16th October to 15th February.—Labour, 6 to 11 a.m.—Meals and rest, 2 hours.—Labour 1 to 6 p.m. 2 months.—16th February to 15th April.—Labour, half-past 6 to 11 a.m.—Meals and rest, 1½ hour.—Labour half-past 12 to half-past 5 p.m. 4 months.—16th April to 15th August. Labour, half-past 7 to 11 a.m.—Meals and rest 1 hour.—Labour, 12 to half-past 4 p.m. 2 months.—16th August to 15th October.—Labour, 7 to 11 a.m.—Meals and rest, 1 hour.—Labour, 12 to 5 p.m.

The rations are only issued once a day on return from work.

3.—Smoking is strictly prohibited.

4.—Insolence in language or manner to the officers or constables of the station, carelessness, indolence, neglect, wilful mismanagement, or evasion of allotted work, are punished by extra labour, solitary confinement, spare diet, and corporal punishment, with shaving of the head.

5.—Any prisoner at a road station deserting therefrom, although he should voluntarily return within forty-eight hours, is liable to imprisonment, with hard labour, for a period of six months, calculated from the expiration of his original sentence, in addition to other punishments; and in cases where he does not voluntarily return within forty-eight hours, he is liable to imprisonment, with hard labour, for two years, from the date of the expiration of his sentence, and to receive, besides, corporal punishment not exceeding 75 lashes.

6.—The prisoners are guarded by constables and police officers, in a number proportionate to the strength of the gang, armed with loaded fire-arms; and in the case of any prisoner deserting from a road station, who, when pursued or discovered, shall fly or resist, so that, except by wounding or killing him, he cannot be apprehended, every constable or police-officer may lawfully prevent such prisoner from escaping, where no other means will avail, even by taking his life.

7.—Seamen are liable to be sent to road stations when sentenced to imprisonment with hard labour, for any number of days, however few; while there, they will be separated from each other, both as respects stations and gangs; and when their sentence is expired, they will be liberated at the station, and have to find their own cost and means to return to Cape Town.—*Cape of Good Hope Shipping and Mercantile Gazette.*

Alteration in the system of Underwriting at Lloyd's—It is reported that the majority of the members of Lloyd's have given their consent to an alteration in the system of conducting their insurance business, and that the assistance of the Committee of Management will be afforded in carrying out this change, which is looked upon as one of considerable importance to the mercantile and shipping interests. The many evils affecting this important branch of city business have long been felt; and although, by a combined movement on the part of the underwriters themselves, a remedy might easily have been found, it has been allowed to increase to such an extent as to become a very serious drawback on all insurance transactions. The magnitude of the abuses complained of have now, however, forced the attention of those most interested towards the subject, and it is hoped the contemplated reform will remove most of the objectionable practices so frequently complained of. The principal causes of complaint are thus given:—1. That goods are shipped and packed in the greatest possible haste, to the risk of sinking the vessels. 2. That people of all classes and characters, of no experience, have become shippers, and the consequence has been gross negligence in the stowage of cargoes. 3. That ships leave our docks so crammed with goods and passengers that the most hazardous part of the voyage is performed in scarcely seaworthy trim, and without room to work the ship. 4. That questionable certificates are given by persons who have no personal knowledge of what is contained in their

declarations. 5. That goods alleged to be sea-damaged are landed on wet quays, &c., and permitted to become worse and worse. 6. The generally loose way in which insurances are effected, by which the underwriter takes a risk on goods of the character of which he has no knowledge. The effect of these practices is, to increase the claims for average, and in some cases, it is said, to promote the concoction of unfair claims, by which the liability of the underwriters is very considerably and seriously increased, without a proportionate premium for the risk incurred. Whilst, therefore, almost every branch of commerce has lately been reaping immense benefits, the underwriters find that although they have done a larger amount of business, it has been with an additional risk and liability of loss, without any increase in the rate of premium.—*Merchants' Magazine.*

RECORD OF WRECKS.

THE number of wrecks reported in February is 179. But the number which we had to record in January was much larger, being 319, the alphabetical lists of which were given in our numbers of the 17th, 24th, and 31st of January. So that, in the first two months of the year, our "Record of Wrecks" shows 498 losses. There can be no doubt that this is much above the average of former years; but the weather during the period over which the casualties extend is well known to have been unusually severe and disastrous.

It has been said that Shipwrecks are much more numerous now than they used to be; but we question whether it is the fact, in regard to the per centage on Shipping, when the great extension of Trade, and the still greater increase in the number of ships engaged in it, are considered. We believe that the proportion of maritime casualities to the number of ships employed will be found not to have increased, but, if anything, to have diminished. This would arise, in some measure, from a better class of ships being built than formerly, and, perhaps, from their being better navigated.

No inconsiderable number of the losses whieh appear in the Record of the past two months have been ships with grain cargoes, in the importation of which there has, of course, been an enormous increase of late. Similar casualties occurred during the large importations consequent on the famine of 1846-47. Wheat cargo, besides being liable to shift and thus prevent the pumps working, too frequently gets into the hold of the ship and completely chokes the pumps. Hence the loss in a large number of such cases of ship and cargo. But not a few of the maritime losses which occur might be prevented if more regard were paid to the manner in which ships are sent to sea. There is too frequently great negligence in regard to it. In taking in cargo, the goods are bundled on board without reference to stowage, or the relative weight of the articles. Perhaps light goods may be stowed in

the lower part of the hold, and heavier goods above them. Those who have to stow the ship have very little discretion left them. The cargo must be stowed as it reaches the ship, and the goods are usually sent according to the convenience of the shipper, without any consideration as to stowage. An action was tried a few days since in the Court of Queen's Bench, "M'ANDREW *versus* LIDGETT and ANOTHER," which furnishes a case in point. The ship, the *Sir Thomas Gresham*, took in a cargo at New York for London, two of the articles of which consisted of spirits of turpentine and oil-cake, which were most unaccountably stowed, almost in *juxta position*, in the after part of the ship. It is really miraculous that the ship escaped being destroyed by fire on her passage across the Atlantic. She reached London, however, without incurring the calamity; and was very properly ordered, by the Dock Authorities, out into the river to discharge her cargo. The narrow escape of the *Sir Thomas Gresham* fully appears from the evidence at the trial. The oil-cake heated considerably on the passage: the effect was to dry and loosen the hoops on the casks of turpentine, and to render them leaky; so much so, that some of them were nearly empty when the ship arrived. Had a single particle of the turpentine come in contact with the heated oil-cake, nothing could have saved the ship, and perhaps every life on board might have been sacrificed. We call attention to this with the earnest hope that such a fearful risk will not again be incurred. Another error, committed in the management of ships, which is frequently attended with shipwreck, damage to the cargo, and other serious loss, is loading them too deeply. Here, again, the Captain of the ship has little, if any control. In short, many losses which now occur might be avoided if more attention were paid to the condition in which ships are sent to sea.—*Shipping and Mercantile Gazette.*

NEW CHARTS.

Charts published and corrected by the Hydrographic Office, Admiralty, in February, 1854. *Sold by J. D. Potter, Poultry, and Tower Hill, London; and the principal Chartsellers; also at the various Custom Houses of the Kingdom.*

	s.	d.
Baltic Index Chart	2	6
„ St. Petersborg, Russian Survey	1	6
„ Dvina Mouth to Riga, M. Clesneur, 1787	1	0
West Indies, St. Domingo Road and Harbour, by the Officers of H.M.S. Hound, 1849	0	6

EDWARD DUNSTERVILLE, MASTER, R.N.

Admiralty, March 21*st*, 1854.

[*All communications to be addressed* "EDITOR OF THE MERCANTILE MARINE MAGAZINE, *care of Mr. W. Foster*, 114, *Fenchurch Street, London.*" *N.B. The real name and address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*]

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

MAY, 1854.

METEOROLOGICAL INSTRUMENTS,

INCLUDING GENERAL REMARKS ON THEIR CONSTRUCTION AND USES.

HAVING already (*Mer. Mar. Mag. No.* 1,) offered some remarks on the nature of those meteorological observations which are likely to prove beneficial to seamen, we think it incumbent upon us, from the substance of several communications with which we have been favored, to draw attention to such meteorological instruments as may be suitable for employment at sea, and, in so doing, we trust that we may be of some service to the instrument maker as well as the observer.

Adhering to our original opinion that *all* observations made at sea are valuable, we nevertheless conceive that those made with the most efficient and at the same time well-compared instruments are by far the best. The instruments generally used may be well employed in roughing out great meteorological outlines; besides, all men's minds are not cast in the same mould—observations that would not be available to one meteorologist, because the object of his research is recondite, requiring the most delicate observations with the most refined instruments, would greatly assist another, who, taking up an entirely different line of investigation, even rough uncorrected observations would throw great light on the subject of *his* enquiries. The article on meteorological observations at sea meets such a want, and we confidently hope it will yield its results, not only in the shape of augmenting our stock of knowledge, but in forming among seamen habits of close and accurate observation. To meet the second, and if it be considered suitable so to designate it, the higher want, we offer the following remarks on the construction, uses, and errors of the principal meteorological instruments. viz :—the thermometer, hygrometer, and barometer, so that all classes of observers may be furnished with directions suitable for the objects they may have in view.

THERMOMETERS.

The methods of constructing thermometers vary according to the objects for which the instruments are intended; being all measures of heat, a good thermometer depends essentially on the relation that subsists between the dilatation of the substance employed and the scale used for exhibiting such dilatation. The most convenient substance for dilatation is mercury, that for enclosing it is glass; and brass, ivory, or box wood, are the substances generally used for the scales.

One of the most important features of a good thermometer is the tube—this should be of very slender calibre, the *bore* being *equal* throughout; but as it is exceedingly difficult to obtain a tube that shall exhibit this qualification, some slight differences existing in various parts, it is very desirsble that every commander should possess a standard instrument—especially if he take up any particular line of study,—not for ordinary use, but only as an instrument of reference, by which he can ascertain the index errors, as they are termed, of those he employs in his daily observations.

In constructing a standard thermometer, one of the first steps after the selection of the tube, is to ascertain the regularity or otherwise of its bore; for this purpose, a small quantity of clean pure mercury is introduced, the length of this ought not to exceed an inch. By means of proper mechanical contrivances, the exact space that this portion of mercury fills in the tube is to be marked on the glass, the same quantity is then to be passed onwards, and a second space marked. By repeating this process, it is evident the entire length of the tube will be separated into spaces corresponding to equal quantities of mercury; and if the graduation of each space be effected *independently*, whatever may be the differences of bore, provided the calibrating column of mercury be short enough, it is clear we have a thermometer capable of giving accurate, or very nearly so, indications of increments of temperature.

In all instruments intended to measure the effects of physical forces, it is very essential that only those substances should be employed that are absolutely necessary for their construction. In the case of a standard thermometer, the substances really necessary are mercury and glass, for by means of flouric acid the divisions may be etched on the tube itself. All that is essential beyond, is the mounting of the instrument in such a manner and in such materials that the divisions may be easily read. The processes however that we have above alluded to must necessarily render such instruments expensive, so that a well-authenticated standard should be most carefully preserved, and only employed for the comparison of inferior instruments.

Such instruments are easily obtained, consequently, a good mode of comparison is very desirable to become acquainted with. The mode generally adopted is, to place the thermometers intended for comparison in a vessel with water, which can be agitated without disturbing the instruments; in this way the temperature may be varied from that of melting ice to boiling water, and the differences between them and the standard determined.

There are, doubtless, many advantages attendant on this mode of comparison, it is expeditious, and we can readily ascertain *all* the errors within ordinary ranges of temperature. Yet we cannot help thinking that occasional, and where it can be managed, frequent comparisons in the *air*, the thermometers being placed as nearly as possible to each other, and the readings made with great care at short intervals, so as to obtain a large series at each gradation of temperature, and then the places of the instruments changed, in order to eliminate errors arising from position, will give the errors with much greater certainty.

It is exceedingly desirable that before proceeding on a voyage, during which it is intended to institute any connected or lengthened series of observations, all thermometers furnished with brass, ivory, or other scales should be well compared. Should any commander not possessing a standard instrument, or not having at command sufficient leisure for this object, we have no doubt facilities may be obtained on shore for the comparison of thermometers as well as of barometers, to which allusion will be made.

The registration of maxima and minima of temperature is a very desirable object; and for this purpose instruments should be chosen least liable to derangement, and whose index errors shall vary as little as possible. For maximum readings, the thermometer of Messrs. Negretti and Zambra appears to be the best calculated to fulfil these conditions, as it is least liable to derangement.

The ordinary maxima and minima thermometers are usually constructed of mercury for the max., and spirit for the min. instrument, with *box-wood* scales. Each instrument is furnished with an index; steel for the max., and porcelain or a somewhat similar substance for the min.; the errors of these thermometers are very variable: *box-wood* being a very unsuitable substance for employment on which to engrave the scales of thermometers, we may take occasion here to advise the commander not to use *box-wood* scales in his meteorological researches.

In reading thermometers, great care should be taken that the eye is brought into the exact plane, or placed on the same level as the top of the column of mercury; if the eye be above this level, the reading will be too low; if below it, too high. A little practice will soon render the mode of reading extremely easy.

In night observations the light should not by any means be brought near the instrument. A very excellent mode of reading thermometers at night consists in illuminating the scale by means of a bull's-eye lantern, which may be placed at such a distance from the instrument that its heat may not affect the mercury, or it may be held at a distance by an assistant.

We cannot point out a better position for the thermometer on ship board than that indicated in the article on Meteorological Observations at Sea, (*Mer. Mar. Mag. No.* 1;) if all the conditions there mentioned can be obtained, we think the instrument will be placed unobjectionably.

THE HYGROMETER.

Although a variety of instruments have been contrived to measure the amount of moisture in the atmosphere, we shall only solicit the attention of commanders to *one* as being by far the most simple, the most easily managed, and the most efficient of them all. We refer to the well-known dry and wet bulb thermometers. Nothing more is requisite than to select two good thermometers, ascertain with the greatest care their index errors for every part of their respective scales, cover the bulb of one with a piece of thin book muslin, and to this muslin attach a piece of cotton lamp wick; provide a small reservoir for water into which the lamp wick may dip, place the two thermometers in a double case, as recommended for the external thermometer in the article on Meteorological Observations, (*Mer. Mar. Mag. No.* 1,) at a distance of at least one foot apart, and keep the muslin constantly wet with distilled water. The reservoir should *not* be immediately under the bulb.

We are aware that hygrometers of the construction named are supplied by instrument-makers *ready for use*. But these hygrometers are objectionable, inasmuch as the bulbs are too *near* each other; in fact, there is no necessity for an additional *dry* bulb, the *external* thermometer, as it is termed, being amply sufficient for its readings. All that is really necessary is a thermometer of the same construction as the *external*, furnished with the muslin wrapper, the cotton lamp wick, the water reservoir, and placed within the same double case at the distance of twelve inches from it. We apprehend that at this distance the dry instrument will not be affected by the water of the wet instrument.

The observation of this instrument is exceedingly simple, it consists only of reading first the dry bulb thermometer, and then the wet, and recording the two readings. In all researches however that have reference to the humidity or moisture of the atmosphere, these readings are highly important, it very seldom happens that they are alike; should they be so, it is a proof that the air is saturated with moisture, *i.e.* there is so much water in the atmosphere that it can take up no more, no evaporation is taking place, and both wet and dry bulbs are of the same temperature. If there be less moisture in the atmosphere than will saturate it, it will take up water from all sources, evaporation in consequence will be induced from the muslin, which will be attended with a depression of temperature, so that the wet bulb will read *lower* than the dry, and this depression will be proportional to the *dryness* of the atmosphere. It would be well to read the barometer whenever observations of the wet and dry bulbs are made.

By means of certain calculations applied to the readings of the dry and wet bulbs, and the barometer, various circumstances connected with the moisture of the atmosphere may be ascertained. Many of these circumstances are of high interest in a meteorological point of view, among them we may notice the dew point, or that precise temperature at which the condensation of the existing moisture in the atmosphere takes place, producing haze, mist, fog, cloud, rain, hail, or

snow. This is not uninteresting to the seaman, inasmuch as the barometer has fallen into some degree of disrepute, on account of the uncertainty as to whether a fall of the mercury will be attended with wind only, or with wind and rain.

The barometer being influenced by both dry air and aqueous vapour or water in an invisible state, it may fall from the effects of a rotatory storm quite independently of the presence of vapour. In this instance the depression of the mercury will invariably be attended with wind, which will fearfully increase as the mercury falls; but if the atmosphere should be gradually getting more moist, as indicated by decreasing differences between the dry and wet bulbs, the pressure at the same time diminishing, rain may confidently be expected. Observations of the hygrometer in connexion with those of the barometer are greatly calculated to indicate to the seaman the kind of weather he may expect.

Another interesting point connected with observations of the instrument is the quantity of vapour present in the atmosphere. This may be expressed either as the degree of humidity, a perfectly-saturated atmosphere being represented by 1000, or by the number of grains of vapour in a cubic foot of air. Although this meteorological element may not be generally interesting to seamen, yet its careful determination in various oceanic localities is exceedingly important. It is to be presumed that nothing like the differences met with on land, especially in the interior of large continents, obtain on the ocean. Yet different zones of the oceanic surface must be marked by different degrees of humidity; the two regions of trades are clearly much drier than either of the three belts of calms, and the zones of passage winds north and south of the equator must vary very materially as regards moisture. It would be well if sets of careful observations at short intervals were taken of the three instruments—dry bulb, wet bulb, and barometer, on the occasions of long voyages to Australia, India, China, and other distant localities. If it could be managed we should recommend *two*-hourly observations.

Another most important point immediately connected with the last is the determination of the elasticity of the aqueous vapour. The aggregate pressure of the atmosphere on the mercury in the cistern of the barometer is clearly made up of two components, viz:—the pressure of dry air, and the pressure of aqueous vapour; these pressures are subject to distinct laws, and a very interesting object of inquiry is the distribution of the pressure of dry air over the surface of the ocean, especially within the tropics. This can be ascertained by observations of the wet and dry bulbs in connection with those of the barometer, when certain computations are applied to them.

There are one or two other points of interest, but those already mentioned are the most prominent. Should any commanders feel disposed to take them up, we recommend Glaisher's Hygrometric Tables as the best attainable for ascertaining the numerical values of these elements by *inspection*.

Of course the same precautions are requisite in reading the wet and dry bulbs as any ordinary thermometer.

SHIPS' BAROMETERS.

What they are, and what they ought to be.—The ordinary marine barometer consists of two distinct parts, a tube and cistern; the tube, which is of glass, is sealed or entirely closed at one extremity and filled with mercury. Around the open end is placed a leathern bag also filled with mercury, and upon this being made tight so that the mercury cannot readily escape, we have the instrument as generally employed on ship board. The tube in which the mercury rises to a certain altitude; and the leathern cistern holding the mercury in immediate contact with the open extremity of the tube.

The tube is generally of narrow bore, and this is greatly contracted towards the open extremity, so much so, that in some instruments a fine needle point will scarcely penetrate the aperture. The object of this contraction is to prevent, or rather to check as much as possible, the oscillations in the upper part of the tube arising from the motion of the ship.

To the upper part of the tube is adjusted a scale for determining the height of the mercury; the range of this scale is usually about three inches, it is graduated to tenths of an inch, and furnished with a vernier for subdividing the inch into one hundred parts.

The instrument thus composed of tube, cistern, scale, and vernier, is enclosed in a mahogany case, suitably mounted for suspending on ship board.

It is important to ascertain if the instrument thus constructed and mounted is capable of being employed efficiently in obtaining the meteorological information desired.

The element of greatest importance ascertainable by means of the barometer is the pressure of the atmosphere; this is measured by the height of the mercury, and it is manifestly of great moment that this height should be measured *accurately*. In the marine barometers, as at present constructed, it is assumed that the altitude of the column is taken from the extremity of the tube dipping into the leathern bag. Now the pressure of the atmosphere acts thus on the leathern bag:—being equal in every direction, the leathern bag is squeezed by the surrounding air, and a portion of the mercury is pushed up into the tube, therefore as the pressure of the atmosphere increases, the mercury rises in the barometer, and as it decreases it falls; if the scale then be adjusted to the height from the open extremity of the tube, it will *always* read the altitude from this extremity.

If there were no atmospheric influences at work to interfere with readings thus obtained, the marine barometer would be a good and efficient instrument. The presence of water however in a state of invisible vapour, produces effects that more or less modify the indications of the instrument. Numerous substances are characterised as being hygrometric, *i.e.* they absorb or part with water according as the atmosphere is dry or moist, and as a consequence they are perpetually undergoing variations in their forms and dimensions; and this is the case in no inconsiderable degree with the leathern bag of the marine

barometer; highly hygrometric, it is continually altering its *form*, and as a matter of course the mercury will rise and fall in the tube from other influences as well as that of the pressure of the atmosphere.

If two marine barometers are carefully compared not only once or twice, but several times, and at long intervals between each, it will be found that the differences are not constant, the hygrometric states of the atmosphere being different at different times, the leathern bags will be differently affected, an uncertainty will consequently be introduced in the reduction of the reading of one barometer to the other. Now there is only one efficient mode of getting rid of this uncertainty, the difficulty of ascertaining the rise and fall of the mercury in the tube arising from the hygrometric action of the water in the atmosphere on the leathern bag is so enormous, if not insurmountable, that it is best to dispense with the bag altogether, and construct the cistern of a substance but little influenced by water. In consequence of the difficulty above mentioned, *all* barometers constructed with leathern bags are considered as next to useless—they are certainly so for any series of observations which it is desirable to *compare* with others.

Another source of uncertainty is the wooden frame to which the scale is attached; this as well as the leathern bag is hygrometric, and is continually altering its dimensions not only from the effect of water, but from the effect of heat. The best way of remedying this defect is to construct the scale itself of metal and append to it a rod of the same metal, which rod should terminate at that part of the cistern from which the height of the mercury is measured.

In many marine barometers the vernier is very roughly adjusted to the scale, and it is generally very difficult so to adjust the index as to obtain the true height of the mercury. We shall allude to the best modes of obviating these defects when speaking of barometers as they ought to be.

Such is the marine barometer as we find it usually employed on ship board. There can be no question that it is capable of considerable improvement; perhaps we shall be better able to judge of what it ought to be after we have directed our attention to those meteorological influences that modify its indications, *i.e.* such influences as occasion it to indicate an increase or diminution of pressure which is not real but apparent.

The most prominent of these influences, as we have already seen, arises from the presence of water in the atmosphere; it is therefore highly important in the construction of barometers that all substances *sensibly* influenced by moisture should be rejected.

The next prominent meteorological influence is that of heat. Every material substance that we are acquainted with is sensibly affected by heat; of course, those substances that are affected in the smallest degree will be most suitable for employment in the construction of barometers.

Bearing in mind the nature of the operation of these two influences, we proceed to enquire what a marine barometer ought to be?

It should be constructed entirely of metal and glass, perhaps a small portion of ivory may not be objectionable, but with this exception,

metal and glass are the only substances that should be used, as being less influenced by heat and moisture.

The tube should consist of an equal bore throughout, with the exception of the contraction at the lower extremity. It should be constructed of the best flint glass, and the upper part especially should be as free from streaks and veins as possible. The contraction of the lower part of the tube should be as nearly conical as it can be made, and great care should be taken to render the orifice of sufficient size that the mercury may have free ingress and egress in its passage from the cistern to the tube, and *vice versâ*, at the same time it ought to be sufficiently small that no undue oscillation may be propagated upward.

It is most indispensable that in the process of filling the tube, the *boiling* of the mercury should on no account whatever be omitted. The efficient action of a good barometer depends essentially on the perfection of the vacuum in the chamber above the mercury, and nothing contributes so much to the attainment of this vacuum as the entire expulsion of the air from the mercury, which is effected by boiling.

There is some difference of opinion as to the superiority of barometers, the tubes of which have been filled and boiled *under a vacuum*, the best makers adopt this course—it would appear to be the most favourable for the complete extrication of the air from the mercury.

The cistern should consist of a metallic well, to which a metallic lid or cover may be attached by a screw, the tube may pass through an aperture in the cover, and thus a cistern may be applied of a very different character to the objectionable leathern bag. The diameter of the cistern should be as small as possible consistent with the insertion of the tube in the mercury; its lower part may be conical, which will reduce the quantity of mercury necessary to be employed in the cistern, and the lid should approach the surface of the mercury so closely as to allow only of the small interchange of the mercury between the cistern and tube arising from the variations of atmospheric pressure.

A slip of metal nearly as long as the tube, and terminating in a fine conical ivory point at one extremity, should be placed alongside the tube. On the upper part of this slip of metal should be engraven the scale, consisting of inches and twentieths of an inch, which should be most carefully measured from the apex of the small ivory cone. The length of ivory employed should be sufficient to allow of a free rise of the mercury in the cistern above the neutral point or apex of the cone when the atmospheric pressure is diminished so that the mercury may be clear of the metal. It would also be a great advantage if the metallic cistern were lined with glass, provided the instrument could be rendered easily portable, as in this case the mercury would be in contact with glass and ivory only. The lower portion of the slip of metal may have a cylindrical form, to allow of its more readily passing through the metallic lid of the cistern. The vernier should be so contrived that its divisions should be in precisely the same plane as the divisions of the scale, in order that there may be no ambiguity as to the coincidence of the divisions of the scale and vernier. It would be desirable to subdivide the divisions of the scale into twenty-five

equal parts, so that readings may be effected to ·002 inch. The motion should be accomplished by rack work.

Attached to the vernier there should be a cylindrical piece of metal to slide freely up and down the tube, as the vernier is raised or depressed. Every part of the circumference of the lower extremity of this cylindrical piece of metal should be most undeviatingly in the same plane, which should coincide with the highest line of the vernier.

The instrument thus constructed, and consisting of tube, cistern, scale and vernier, should be inclosed in a cylindrical metal case, with openings in the upper part to allow the free access of light both to the front and back of the tube. This case should be as *thin* as the safety of the instruments will allow, so as to combine portability with safety. It ought also to be furnished with the usual means of rendering the instrument portable, but not by a screw; in fact, the entire instrument should be a portable marine barometer of the best construction.

Errors.—There are three sources of errors, or rather there are three natural forces operating on the mercury in barometers of the construction last named, raising or depressing it, quite independently (or to a very great extent so) of the pressure of the atmosphere. The effects of the operation of these forces are readily calculable; so that to the readings of the instrument certain corrections may be applied, by which the *true* pressure of the atmosphere as indicated by the barometer may be obtained.

The correction of greatest extent is that due to temperature; heat dilates most substances, and to a certain extent converts a barometer into a thermometer, inasmuch as the mercury rises in the tube from the effect of heat as well as pressure. But as the dilatation of mercury by heat is well known, the altitude of the mercury may be reduced to the value it would have at any given standard temperature. The temperature of water when freezing is a point easily attained under almost all circumstances. It is so far as we know invariable, and, in consequence, all barometric readings used in meteorological investigations have been reduced to the standard temperature of the freezing point of water. Not only, however, is the mercury in the tube dilated by heat, but the metallic scale also is similarly affected, and as the scales are usually constructed of brass, the tables for reduction are based upon the dilatation of mercury and brass.

There is some reason to believe that glass repels mercury; for it is found by experiment, that in a narrow tube immersed in mercury the metal stands *lower* than that on the outside, both surfaces being convex, the mercury in the barometer will consequently stand at a lower level than that indicating the true pressure of the atmosphere at the time; but, as the amount of this depression can be accurately calculated, the readings are easily corrected on account of the difference.

The third source of difference between the true and apparent readings consists in the mutual interchange of the position of portions of the mercury as the atmospheric pressure increases and diminishes. Upon an increase of pressure, a portion of mercury in the cistern is pushed into the tube, and the reading is lower by this quantity than the true reading, because the surface of the mercury in the cistern being

lower, the column itself is higher than indicated by the scale. On the other hand, with a diminution of pressure, a portion of mercury leaves the tube and occupies the cistern, rendering the reading higher than the true.

It is manifest that this correction depends entirely on the relative capacity of the tube and cistern; it also requires a fixed point to be calculated from. This fixed point is the height at which the mercury stands in the tube when the ivory point terminating the scale is in exact contact with the surface of the mercury in the cistern. All readings above this fixed or neutral point, as it is called, require an additive correction, and all below a subtractive one.

The above corrections are applicable to all barometers constructed on the principles above mentioned. It is, however, a very difficult matter to obtain barometers of precisely the same construction that will read identically the same. The cause of this difference we shall not now enter upon, suffice it to say, that in this country the readings of barometers employed in meteorological investigation are mostly referred to that of the Royal Society's flint-glass standard barometer, and the mean difference between its readings and those of any other barometer is regarded as the index error of the barometer compared with it.

In most instances it would be clearly impracticable *immediately* to compare a ship's barometer with that of the Royal Society; but we have every reason to believe that facilities may be obtained for effecting *accurate* comparisons with an instrument whose zero has been well determined. In all *great* meteorological questions, there can be no doubt of the vast importance of the zero error. In the investigation of a large storm; the determination of mean pressure on certain parts of the oceanic surface, and a variety of other cases that may arise, all compared instruments speak the *same* language. We do not wish to depreciate any recommendations in the article on meteorological observations at sea. We perfectly agree with the writer, that *all* observations are valuable in some way or other; but if we have twenty well constructed and well compared barometers dotting a certain portion of the ocean, the results obtained by means of them must be increasingly valuable.

There are two modes of obtaining the zero error of a ship's barometer. If it be a portable one of the construction already alluded to, it may be compared immediately with a standard whose zero is well known. But if it cannot readily be removed from the ship, the comparison can easily be effected by means of an intermediate portable barometer, or better still, an intermediate portable *marine* barometer. When making the comparison on board, the two barometers should be placed as near to each other as possible. No reading should be attempted for at least an hour, and then if it can be accomplished, readings at considerable intervals (an hour at least) should be taken of both instruments, and carefully recorded. Each reading should have the three corrections already spoken of applied, and the mean of every set of ten readings accurately ascertained. This process should be continued until the observer is perfectly satisfied that he has obtained the mean zero error within the thousandth of an inch.

The advantage of having all barometric readings reduced to one common standard is very great. There can be no question that in this country the standard to which all others should be referred is the Royal Society's flint-glass barometer; and in order that this standard may be perpetuated, as well as extensively adopted, it is very desirable that on every suitable occasion the zero of every barometer should be most carefully verified. Two comparisons should be made at least on the occasion of every voyage, one previous to sailing, and the other on the return of the vessel. It would also be exceedingly important to institute comparisons with instruments on shore in various parts of the world. The great American system of marine co-operation renders this very desirable. We are aware that in the investigations carried on in America relative to the rotatory storms of the Atlantic, careful comparisons of the ships' barometers are effected both previous to sailing and after the return of the vessels. Many of our vessels trading to New York with such instruments as above recommended may easily obtain readings with standards in that city, and thus the difference between our own standard and the American standard may become known. Again, the same thing may be done in Calcutta, Cape Town, and various other places, and in this manner the zero of one standard may be transported over the whole world.

The transportation of the zero of *one* standard over the whole world is by no means a point of trifling importance. We are not aware that the standard readings of the Royal Society's flint-glass barometer are *extensively* known. We have some reason to believe that instruments exist at the Cape, Van Dieman's Island, at several stations in India, and also in Canada, that have been directly compared with the standard; but whether intermediate comparisons have been made since such instruments were taken from England we have no means of knowing. Should any commander who may read these pages feel sufficient interest in the subject of meteorology, not only to possess a good and efficient instrument, but to contribute as much as in him lay to the attainment of one uniform system of reference; we would advise him to procure an additional barometer of precisely the same construction as his ship's barometer—if it be a portable marine one—to guard it most carefully from accident, and keep it safely in the "portable" state, using it only for comparison with instruments on shore, and a similar number of readings with his own on board. Such comparisons, if made with all due care, the zeros in every case being accurately determined, cannot fail of greatly elucidating the important question of the distribution of pressure over the surface of the ocean, and indeed over the surface of the globe itself.

The remaining correction that we have to notice is to the level of the sea; small as the difference may be between the position of the instrument and the water line of the ship, it is nevertheless important in some delicate investigations to apply such a correction; if the level of the mercury in the cistern be *above* the water line, the correction is to be *added;* but if it be *below*, the correction must be *subtracted.* Its amount may be regarded for all altitudes of the cistern of the barometer above or below the water line on ship board as equal to 0·001 inch for every foot of difference of level.

In the above remarks we have noticed the five corrections necessary to be applied to barometers, in order to obtain not only the true, but also readings capable of being employed in extensive meteorological researches. Two of these corrections depend on the action of forces influencing the mercury in the barometer as well as pressure; one depends on the immobility of the scale, one on the position of the instrument, and one is necessary to render its readings comparable with those of all others. Thus we may sum up what may be termed the theory of the barometer.

Application of Corrections.—The proper application of these corrections is by no means an unimportant point in the attainment of accurate results. The first that should be applied is clearly that for capacity. We should have the true height of the mercury in the tube from the level of the surface in the cistern, before we can readily apply either of the others. In order to apply the correction for capacity, we must first find the difference between the reading of the instrument and the neutral point, and divide this difference by the capacity. Thus suppose the neutral point to be 30·023, the capacity $\frac{1}{42}$, and the reading 29·309, the difference ·714 is to be divided by 42, the quotient ·017 will be the correction for capacity, and as the reading is below the neutral point, it must be subtracted, the scale giving the reading too high; the corrected reading then is 29·292. This must now be corrected for the capillary action of the tube, which, if a boiled one, and less than two-tenths of an inch diameter, will be ·032, always additive, because the action of the glass depresses the mercury. The reading now becomes 29·324, which is higher than it ought to be, on account of the temperature 54°·3, the correction for this temperature being ·068; the reading corrected for these three disturbing effects becomes 29·256. Now suppose the zero error to be ·036 additive, and the altitude of the cistern above the water 4 feet, the two corrections will be +·040, which, added to 29·256, will become 29·296, the measure of the atmospheric pressure at the level of the sea. The operation stands thus:—

Attached Therm..........54°·3	
Barometer reading..............	29 309
Corr. for capacity —	·017
	29·292
Corr. for capillarity + ...	0·32
	29·324
Corr. for temperature —	·068
	29·256
Corr. for Zero and water line +	·040
Aggregate = (presumed sea level)	29·296

Data for the Correction of the Instrument.

Neutral point	30·023
Capacity $\frac{1}{42}$	
Capillary action + ...	·032
Zero to Royal Society + ...	·036
Corr. for altitude above water line + ...	·004

A word or two on the position of Barometers, also on the management and the general care of them on ship board.—The ship's barometer should be suspended on a gimbal frame, which ought not to swing too freely—there should, in fact, be some degree of friction by which sudden oscillations may be deadened. A position for the instrument ought to be chosen out of the reach of sunshine—it should be placed in a good light for reading, as near midships as possible, and where it is not likely to be exposed to sudden changes of temperature or gusts of wind. As a means of guarding against the undue influence of temperature it would be well to inclose the instrument in a stout wrapper of flannel, over which may be placed a leathern case, having suitable openings for setting and reading the barometer and its attached thermometer.

The last-named instrument, the attached thermometer, ought to indicate a temperature the exact mean of that of the whole barometric column. There is a difference of opinion as to the best position for it; it has been suggested that if the bulb was placed about fifteen inches above the cistern inclosed in the case, nearly in contact with the tube, the stem of the thermometer extending sufficiently high to be read off at the level of the barometric column, it would exhibit a very near approach to the true mean of the barometer itself. Many instruments have a small thermometer placed alongside the scale of the barometer, and others have the bulb of the thermometer dipping into the cistern of the barometer. Perhaps a careful series of observations are requisite to determine the best position.

Considerable care is requisite in setting and reading a barometer of the construction named above. The cylindrical index, with the opening in the hinder part of the case, are admirably adapted for ensuring accuracy in these operations. It is exceedingly important that the lower part of the cylindrical index should be a *tangent* to the convex surface of the mercury in the tube; for this purpose the back and front edges of the lower part of the index are in the same plane, so that light being admitted from behind, the eye can readily be brought into this plane by observing when the two edges appear as one. When the last fine line of light between the summit of the mercury and the coincidence of the edges of the index disappears, which can be effected very gradually by means of the rack work of the vernier, the instrument is properly set.

The setting of the barometer being effected, the next step is the reading; before, however, the setting is attempted the attached thermometer should be read, in order that any heating influence of the body in the act of setting should not occasion too high a reading of the thermometer, for it is easy to conceive that a delicate thermometer may be affected before a corresponding rise of the mercury in the barometer can take place. First, then, read the attached thermometer. Secondly, set the barometer. Thirdly, read the vernier.

In any record that may be made of the readings of the barometer it is desirable that none but readings as they occur may find entrance. Each of the above-mentioned corrections, depending on different arguments, have to be applied *after* the reading is effected; by

recording the true reading, and then afterwards applying the corrections, it is likely errors will be avoided; otherwise, by attempting to apply *all* the corrections before entry, should errors be made, it will be next to impossible to arrive at the truth—there is less chance of reading incorrectly than of applying corrections incorrectly.

In addition to the metallic case already spoken of, and the leathern case well lined with flannel to ensure as much as possible equability of temperature, each barometer should be furnished with a strong travelling leathern case, in which it may be securely placed in an *inverted* position. When not in use, or in the act of being transported from place to place, the lid of this case should be furnished with a strap and buckle to keep it secure.

T.

THE AZIMUTH COMPASS.

[*To the Editor of the Mercantile Marine Magazine.*]

SIR,—In Captain Walker's report of his investigation into the loss of the *Tayleur*, which came to my hand during my recent voyage, I perceive a great stress is laid on the fact of that ship not having an azimuth compass on board, and without which Captain Walker says "the error of the compass cannot be ascertained with accuracy." Now, I believe this to be a mistake, which, coming from such a source, is liable to mislead many masters—giving them the idea that if they have no azimuth compass on board, there is no alternative than to go whithersoever a mad compass is disposed to carry them. I therefore beg, if at all practicable, the wedging of this letter in your valuable Magazine, believing it may be of some use to the navigator, and with the wish to show that the means for ascertaining the error of the compass, or the direction of the ship's head, is within the reach of every captain, even without an azimuth compass on board. The azimuth compass to the navigator is unquestionably a useful instrument; but as it is only required in the present case to get the bearing of the sun, it can be dispensed with, and the sun's bearing got without it. I manage this by the following simple plan:—To my binnacle compass I have a needle about three inches long standing vertically over the centre of the compass-card—attached to the glass, but not touching the card. It will be evident to every one that the sun will throw the shadow of this needle along the surface of the card in the same way as the centre-piece of a sun-dial points out the time. The sun's altitude is taken, and the degree or half degree on which the shadow falls is noted, and the corresponding one on the opposite point of the compass is, of course, the sun's bearing, or magnetic azimuth, with which the error of the compass is worked out in the usual simple way. The plan is

altogether so simple, and the deviation of the compass got with such accuracy, that I think it has only to be once tried to ensure its being generally adopted. As a further check on the compass, the position of the shadow is observed the moment the sun is on the meridian; and as that luminary then bears true south, he will of course throw the shadow of the needle true north. The number of degrees between this shadow and the magnetic north will be the error of the compass, thus secured without the trouble of calculating. The above plan I have been using for now nearly two years, and in preference to the use of the azimuth compass, as it is done by the very compass by which I have to steer.

Much importance is also attached to the swinging of ships in dock before going to sea. I do not wish to lessen the importance of this act. Every means ought to be used to understand the mad humours of an iron-ship's compass. But experience has taught me that compasses adjusted by magnets, and the table of errors taken by swinging the ship in dock, are unsafe guides, and unworthy of full confidence at sea. I have had three compasses adjusted, a table of errors taken, and have no sooner been at sea than each compass had its own particular idea as to the position of the north pole, one telling me to go this way, and another telling me to go that. Of course, such a difference of opinion existing among those which ought all to see alike, I have been compelled to believe in none. Now, strange to say, the next time the ship has been swung in dock the compasses have given a table of errors very much the same as when swung before. I name this fact lest too much confidence be placed in compasses adjusted by magnets, and in a table of errors taken in dock. While these adjustments have been of use to me, I should often have been ashore had I, with full confidence, relied on them. Again, as I take daily observations on my compass, I by this means get its error in different latitudes; but I seldom find it the same for two voyages running. The error seems to be constantly changing; and as my voyages are only seven weeks' average, it shows how long a table of errors ought to be trusted. Much more might be said on this subject; but as I have already trespassed in length, I will now conclude with recommending to all masters, who, like myself, command an iron vessel, the adoption of this simple check, feeling fully persuaded that if any attention is paid to it, such a frightful catastrophe as that which has so recently taken place, may never again owe its origin to the captain not knowing which of his compasses is in error.—Yours, &c.,

JOHN MILLER,

Commander (s.s.) Arabian.

LIVERPOOL, No. 31, Falkner-street.

THE BEST ROUTE FOR VESSELS FROM SAN FRANCISCO TO PERU.

[THE following information has been furnished by Lieut. M. F. MAURY, U.S. Navy, for the guidance of Captains navigating between San Francisco and Peru.]

National Observatory, Washington, March 20*th*, 1854.

The clipper ship *Comet*, E. C. Gardner, is one of the vessels co-operating with us in the plan of observations for the Wind and Current Chart.

She has just performed a famous run from California to New York. It is the shortest thence on record at this office, and the abstract log of it has been received. I beg leave to make it the subject of a special report:—

That combination of wind and sea on the Polar side of the parallel of 45° S., which enables clipper ships to run down their easting with such astonishing speed, is not to be expected along a route which, like this, crosses and re-crosses the whole system of trade-wind and calm belts of the ocean. Nevertheless, the thirty-fifth day out from San Francisco, this ship had crossed five of these belts, made 68° of longitude and 95° of latitude, and doubled Cape Horn. During the voyage she was six days in calm and light baffling winds, making on the average during these six days only 2·8 knots per hour. Her greatest speed for any one day was 371 statute miles, (350 knots.) From the Heads at San Francisco to the Bar at Sandy Hook she was 76 days. Deducting for the six days of calm and baffling winds, she ran for the 70 days on an average 205 knots per day. This is more than steam-ships on a long voyage—as from England to the Cape of Good Hope—usually make. Great skill and judgment appear to have been displayed in the navigation of the ship.

One of the drawbacks with which the vessels in the California trade have to contend is the want of a return cargo; heretofore they have been in the habit of going to China for it, and occasionally from California to the Sandwich Islands for a return cargo of oil.

But since the publication of the last edition of "Sailing Directions" I have begun to receive, in numbers, abstract logs of vessels bound both from Australia and California to Peru for guano—hence I infer they go in ballast for it. The facility with which the passage may be made from these two rival lands of gold, will, both in Europe and America, enter as an element into the question of freight. In a commercial point of view the relative facility with which these guano islands may be reached from the two "Ophirs" is calculated to have bearings of some consequence to the trade both of California and Australia. From Australia to these islands the route for the best winds coincides very nearly with an arc of a great circle; and the way, therefore, is plain.

But from San Francisco the route appears to be not understood at all; the most experienced navigators confess themselves to be at

fault with regard to it; and as no special sailing directions have been given, I beg leave now to offer a few suggestions with regard to it.

The best route from California to the guano islands of Peru, is the track from California to the United States, until the belt of the S.E. trade winds be crossed; or until they will allow the guano bound vessel to lay up for her port. Though the guano islands are in 12° S., vessels bound to them from California will frequently have to go as far S. as 35° to 40°, or even farther, before they can lay up for them.

When a vessel, therefore, bound for Peru, comes out of San Francisco, her best course is to run down for the equator, about its intersection with the meridian of 115° to 120° (125° is not too far) and with topmast studding-sail set, to stand on to the southward until the wind hauls so as to allow her to lay up for her port; or, when the wind fails so to haul, she should keep on south across the calm-belt of Capricorn, and with the west wind on the polar side of these calms, run down easting enough, so that when she returns to the S.E. trades, they will lead her into port.

The usual passage from California to these islands now occupies from 65 to 70 days; by the route here recommended, it should not be so long. The way is plain; dash down from California, not caring to make easting until the winds are fair for Callao. Every homeward bound vessel from California crosses the track of the guano traders from Australia.

The *Comet*, to where she crossed it (lat. 49° S., long. 107° W.), had 28 days; and from this crossing (which is out of the route from San Francisco to Callao) the guano traders from Australia have usually from 20 to 25 days to Callao.

The passage from San Francisco to the guano islands of Peru ought not, on the average, to occupy more than 55 days.

COMPASS ADJUSTMENTS.

[*To the Editor of the Mercantile Marine Magazine.*]

Sir,—I perceive in a Liverpool newspaper a letter from Capt. Miller, of the iron steamer *Arabian*, concerning the adjustment of ships' Compasses, and the use of the Azimuth—a letter certainly worthy the attention of all shipmasters.

I am, however, inclined to think he did wrong in not addressing his communication on that important subject to you, so that it might have stood a chance of being appreciated by a larger number of *interested* readers than could possibly be the case from its insertion in a local periodical.

I have also read the remarks which have appeared in your Magazine relative to the same subject, and from your manner of treating the affair, feel persuaded that you are up to a thing or two.

As one, once connected with a command in the merchant service and still interested in its welfare from old recollections and prepossessions, I beg to offer a few remarks which I hope will show the necessity of particular attention being devoted to the subject by shipmasters *personally*.

In the first place—why do masters of iron vessels leave to others a duty (affecting the lives of all board) of such importance as the swinging of the ships they command? Why is it so?—Is it because of their superior knowledge of magnetic influence that Opticians are selected—I beg pardon—*thrust their peculiar qualifications into notice?*—Is it because the landsmen have a secret scientific plan known only to themselves, which a "Salt" cannot appreciate or possibly understand?—Or are the Captains and Chief-officers of merchant-ships such Marines now-a-days that while their ship is being swung at Liverpool, Greenock, or Greenhithe, they cannot at least see to the bearings being correctly taken? They should do so—and ought also to remark all variations during the voyage of the ship, noting as nearly as possible the exact position where changes in the amount of attraction take place, &c.; thus paving the way for some conclusion being arrived at from facts collected.

Have the Opticians any interest in arriving at a solution of the subject? or would it not rather spoil the nice little annuity now made by some of them? Are they (landsmen) more capable of reducing a theory into practice—a theory that must first be developed from the observations of those in charge of ships? Why cannot shipmasters give their attention to the subject a little, instead of being led by the nose by quack-doctors, whose interest lies in continuing a system of scientific mystery, so that the poor dupes have nothing else left but to pay for their gullibility.

I have given a little attention for some time past to the compass-adjusting process, and have been surprised to find how easily Owners and Captains are gulled by a sort of specious or bouncing mannerism, exhibited by some of our scientific adjusters to the merchant service—with their infallible dodges warranted to bother a compass against its will and against all rules laid down by scientific men who *really* understand the subject. I have *heard* of an iron ship being swung in a tideway by a clever landsman, adjusted with magnets, and a table of errors taken—*in two hours*. (*Query*—How many points were taken?) I have *seen* an iron ship's magnetic influence on the compass disposed of in four hours by the sliding on deck of two magnets, eight points only of the compass being noted, the rest left to arrange their various fanciful errors as they liked best. I have seen *boys* employed on more than one occasion to note bearings while a ship has been adjusted at Greenhithe, and conclude from that circumstance that the scientific adjuster was doing the job cheap for a needy Owner—and so cut short all expense possible on such an *un*important occasion. Knowing how readily the attention of boys is diverted, if I had been officer of a ship

swung to the observations of such an observer, I would at least have had an eye on his readings, but imagine I should not have been justified in so doing, as officers of iron ships are supposed to know nothing about the subject when near land, although every day during the voyage they have occasion to use instruments and take observations to *check and correct* the Optician's *error-tables*—a duty they are supposed incapable of doing on other occasions. Really Mr. Editor you must for the benefit of the class you represent (the Merchant Captains) give a detailed account of all the various mysterious methods of "compass adjusting," so that those in charge of iron ships may be better able to perceive what these patent manœuverers *really* do for the benefit of the poor devils at present led by the nose by them. Leaving you to overhaul the subject as you think best,

I am your obedient servant,

AN OLD SALT.

[We think it right, in this place, to let our readers know that the article on the Mariner's Compass, which was commenced in a previous number of the Magazine, will be continued in our next.—ED. *Mer. Mar. Mag.*]

NAVIGATION.

ITS DIVISIONS — THE SCIENCES CONNECTED WITH ITS STUDY: NAUTICAL ASTRONOMY AND DEAD-RECKONING,— THE DANGER OF NEGLECTING EITHER.

(*Being the Introductory Lecture to the Course for* 1854, *delivered in the Nautical School, Liverpool, to the Officers, Seamen, and Apprentices of the Mercantile Marine,*)

BY J. T. TOWSON, ESQ.,

(*Scientific Examiner to the Local Marine Board of Liverpool.*)

NAVIGATION derives a greater amount of aid from the various branches of Natural Philosophy than any other practical science. There is, in fact, scarcely a science with which we are acquainted that does not, to a considerable extent, form a subject well worthy of the consideration of the Mariner. Those who would attain a high position in connection with nautical pursuits, cannot give too much attention to subjects connected with Natural Sciences. It is unfortunate for him who is destined to be practically connected with Navigation, that, although these subjects are of considerably more value to him than to any other of the industrial classes of society, the means afforded for his attaining this description of knowledge is far less than that which others possess. The Mechanic has his Institute, the Farmer his Agricultural Societies, the Machinist his Polytechnic Societies, the Miner his Geological Societies, the Merchant his Philosophical Societies, and every class of our resident population the Free Public Library; but the Seaman,

e nature of his calling, is separated from all these valuable lthough to him the information they impart would be of more than to any other class of society.

An effort is being made to place within the reach of nautical men pportunity of obtaining scientific information by means of lectures. cknowledge that this mode of imparting knowledge to the mariner ttended with this great disadvantage:—his residence on shore at period is not, generally, of sufficient continuance to afford him the antages enjoyed by other classes, of being enabled to attend the ole of any course of lectures. This being the case, it becomes those o undertake the task of preparing subjects for illustration, to ake each lecture, as far as possible, complete in itself; and if it be ue that the mariner enjoys fewer opportunities of obtaining the arious branches of knowledge which would be valuable to him, it is the more important that he should avail himself of every opportunity afforded him. The value of lectures as a means of communicating knowledge, is, that more than one of the senses is employed in receiving information—the hearer can see as well as hear; and for this reason there will be prepared, in connection with the lectures about to be delivered to the mariner at this port, as many experiments, diagrams, and other ocular demonstrations, as the subject will possibly admit.

We have stated that every branch of Natural Philosophy, and a knowledge of every science, is valuable to the mariner, and we will now endeavour to illustrate this fact by reference to a few instances.

Mechanics.—The use of the mechanical powers and the laws of forces—these are subjects of so much importance to the mariner, that we are directed by the Board of Trade to make them the subject of our next lecture. This being the case, I will only observe at present, that this science is of more importance to the mariner than even to that class of operatives usually distinguished by the name mechanic. The mechanic has his tools, machines, and other mechanical appliances provided for him. It is not so with the mariner; his inventive powers are constantly called into operation, for he has frequently immense mechanical efforts to make, without having even the most suitable materials with which to construct his machine. To him, therefore, the old proverb "knowledge is power" is especially applicable.

Pneumatics teaches the mariner the laws relating to the winds, a subject of the highest importance to him. The barometer is a pneumatical instrument with which every master mariner should be thoroughly acquainted. The safety of a ship has often depended on the use of the barometer; and no man can be, in every respect, a proficient in its use who does not understand the principles of its construction.

No person is competent to superintend the construction, the alteration, or the repairs of pumps, unless he possesses some knowledge of *Hydraulics*. I need scarcely observe that this science is of importance to the mariner, since the safety of the ship may depend on the condition of the pumps.

A knowledge of *Optics* enables us to understand the nature of refraction, and to avoid being led into error by the irregularity of

atmospheric refraction. All the astronomical instruments, moreover, require an acquaintance with the laws of this science, in order to understand either the principles of their construction, or to correct the errors to which they are liable.

A certain amount of *chemical* knowledge would be very valuable to the mariner. He should at least be acquainted with the nature of the *gases which are disengaged in a ship's hold.* I once met with an instance in which the want of this knowledge led a captain into a very great, if not fatal error. In the China Seas a ship was engaged to take Coolies to South America. Great mortality broke out on board. The captain and supercargo had recourse to fumigating the vessel by burning charcoal with scented wood. What the doctor thought of this I do not know; he certainly ought to have possessed a sufficient knowledge of Chemistry to have prevented the adoption of such a course. I have, however, been informed that such a practice is prevalent in the Eastern Seas. A little knowledge of the science of chemistry would teach that the burning of charcoal produces a very poisonous gas—the very gas which renders overcrowded places unwholesome; and that, in a crowded ship, the fumigation here referred to is only calculated to increase the evil it is intended to remove.

The preservation of the ship's stores and cargo would be frequently promoted by a knowledge of Chemistry; and by its aid the mariner would become acquainted with the conditions calculated to produce spontaneous combustion.

Electricity is also to the mariner a science on the knowledge of which his safety may depend. The phenomena of Electricity are exceedingly interesting to all. On its laws depend the most sublime phenomena of nature—thunder and lightning; and the seaman, in passing the Tropics, witnesses these phenomena in their most awful form. If it only afforded him the means of understanding the nature of these sublime displays of Almighty Power, the science of Electricity would be well worth his study. But it affords him far more valuable aid in enabling him, by conforming to those laws of nature which lead to safety, to guard against the danger to which he would be otherwise exposed.

Magnetism is a science which may be said to belong especially to the mariner. The compass is his, and almost all the theory of Magnetism is brought to bear on the compass. Magnetism is of far more practical value to the mariner than to any other class of society; and in these days of iron ships and Australian voyages, it is a science with which he cannot be too familiar.

The knowledge of the *laws of the tides* is almost exclusively important to the mariner.

In thus prominently bringing to the notice of the mariner some of the sciences in which he is, to some extent, interested, I do not desire it to be understood that it is necessary that he should be thoroughly acquainted with each, but I do desire to prove that as much information as can be afforded in a lecture on either of these subjects is calculated to be of practical value to him; and as these subjects will be treated of in the lectures about to be delivered at this port, I wish

to impress the minds of those present with the fact, that the information about to be imparted may hereafter prove of the utmost importance to them individually.

There are, however, some sciences, a knowledge of which more especially constitutes the science of *Navigation*, and without some knowledge of which no man can be said to have a knowledge of Navigation.

It has been said that navigation naturally divides itself into three departments—the meteorological, the geographical, and the mathematical.

Without a knowledge of the nature of the Monsoons, no mariner is qualified to navigate a ship in the Chinese or Indian Seas. The Trade Winds have always constituted an essential element of nautical study; and, in the present day, *meteorological* observations at sea and practical deductions therefrom are daily pressing their importance on the mariner's attention. The laws of rotatory gales claim the study of all who navigate the tropical seas, as the safety of the ship may often depend on a sufficient knowledge of them.

The *geographical* department includes a knowledge of the coasts, of the lights which distinguish headlands, and of the construction and use of charts. Its study forms a principal element in the navigation of vessels employed in the coasting trade, and also an important part of the navigation of foreign-going ships.

The *mathematical* department, which includes the whole science of Nautical Astronomy, is, however, the most extensive and important. In the lower order of Navigation employed in our coasting trade, as well as in the highest branches of the science, Mathematics form the principal basis.

On examination of the nature of the navigation of our coasting vessels, we shall find that it is principally founded on what is denominated dead reckoning. Departures are taken from known headlands, the distances of which should be determined by the aid of trigonometry. The principal instruments employed are the *log*, the *compass*, and the *lead*. The log shows the distance run, the compass the course steered, and these two observations give two parts of a right-angled triangle, from which the position of the ship can be determined. The lead again furnishes a check; for if the soundings agree with those on the chart at the point where, by dead reckoning, we suppose the ship to be, it confirms the correctness of our reckoning; and in thus checking the correctness of our day's work, we not only avail ourselves of the depth of water, but also of the nature of the bottom of the channel. For this purpose the lead is armed with some fatty substance. It is, however, of little use to arm the lead, unless we previously make ourselves acquainted with the nature of the bottom at various parts.

In determining the position of the ship, from the bottom as shown by sounding, a knowledge of *Geology* and of the distinction between different kinds of sand and gravel would greatly assist the mariner, who would by its aid be enabled to record the indications of certain positions, by describing in writing the bottom of the channel according to its technical character.

But while the mariner employed in coasting, gropes along, directed

by near objects, headlands and his lead—the mariner who conducts the navigation of our foreign-going ships, guides his ship by reference to *celestial bodies.* The stars which fill the immensity of space indicate to him who navigates the trackless ocean his position on the earth's surface, and serve him as guides. It matters not to him that he is thousands of miles distant from that part of the world which he had previously navigated; for, in some well-known star, he recognises an unerring guide, and by its position determines the exact point he occupies on this earth's surface. In the sun, too, he has a guide and a beacon to indicate his position and warn him of danger. The planets confer on him equal benefits; but the moon, among all the heavenly bodies, is regarded by him with peculiar interest. Not only does she confer on him all the benefits derived from other heavenly bodies—by determining, by her meridian altitude, the latitude—by her altitude distant from the meridian, the ship's time—and by her position the correction of the compass—but, in addition to these, as the clock of nature, she, by her motion among the stars, indicates the time at Greenwich, and enables the mariner either to check his chronometer, or to determine the longitude of the ship without the aid of that machine.

The study of the science of Astronomy, irrespective of the inestimable benefits which it confers on the mariner, possesses, we should imagine, sufficient charms to demand a portion of his attention. In his night watches, what so deserving his notice as the heavenly bodies. On leaving his native shores, day after day, those stars which from his infancy he has noticed high in the heavens descend gradually to the northern horizon. Orion ascends to the zenith, and constellations before unknown to him rise above the southern horizon. He sees the Southern Cross, Magellan's cloud, and other celestial wonders, only witnessed by those who traverse the mighty ocean. If the shepherds of Chaldea, contemplating the heavenly bodies, could see enough beauty to induce them to undertake their division into constellations—if they who lived in a less enlightened age than the present, felt so much interest and delight in the contemplation of these glorious bodies, during the nights which they spent in the open air protecting their flocks, shall it be said that the seamen of the present day, with whom operate all the inducements which moved those shepherds to this study, and in addition to these the knowledge that an acquaintance with these glorious bodies can alone conduct him to the height of his profession, is so degenerate from that race who more than two thousand years since occupied the sheep-walks of Asia, as night after night, to perceive these heavenly bodies rise and set, without possessing a desire to be informed of their nature, or of the uses to which Navigation has applied them.

Truly, I am not surprised that some who have attained the height of their profession should look down upon that class of Navigation which depends on terrestrial objects as upon a mean pursuit. I am not surprised that some, thoroughly acquainted with the higher branches of nautical science, should be so taken up by its beauties, as to neglect the humbler means of navigating their ships. But when

acknowledging that I am not surprised that such should be the case, let me not be considered to vindicate the practice. On the contrary, I mention the fascinating character of Nautical Astronomy, in order that I may the more earnestly and effectually warn the mariner against the error, the *fatal* error, of neglecting the humbler pursuits connected with his profession—*dead-reckoning and the lead*. I have heard, with regret, men of high nautical reputation, boast that they could bring their ship up the channel by the aid of their sextant alone, and without using either the log or the lead. As, however, the only object gained by such a proceeding would be the display of his own ability, and since the safety of the ship in such circumstances depends mainly on the dead-reckoning, the lead, and the look-out, the mariner is inexcusable who, when in the channel or near land, would neglect any of these appliances, and depend solely on astronomical observation. After having adopted these precautions, there can be no objection to the use of his sextant, but he should remember that Nautical Astronomy is an engine intended to measure out the trackless oceans on the earth's surface, and not to guide through narrow channels.

But if, under certain circumstances, Dead-Reckoning takes the precedent of Nautical Astronomy, it is proper that it should be practised at other times. If seldom adopted, that proficiency which is requisite in the time of need, will not be acquired. Every day, I have evidence of how necessary it is to practice daily these simple problems. I often meet with gentlemen, who have made themselves proficient with regard to the higher branches of their profession, and yet have narrowly escaped the mortification of failing in their examinations, from inexperience in working a common Day's Work, which duty they have been in the habit of leaving to their junior officers.

There are three reasons why the practice of Her Majesty's navy of working a day's work every day should be adopted universally. First:—by the practice alone can the mariner obtain that proficiency in navigating by dead-reckoning, which is necessary when the safety of the ship depends on it. Secondly:—by comparing the result of dead-reckoning with the actual place of the ship as obtained by observation, we obtain a knowledge of the currents of the ocean. And thirdly:—dead-reckoning, even under circumstances in which it is decidedly inferior to the higher branches of Navigation, is a check to the latter. Many of the problems in Navigation are rather complicated, and the best mathematician is liable to error. To guard against error it is desirable to have some check or proof. With such a check, dead-reckoning furnishes us; for if the position of the ship, determined by its aid, agrees with that found by observation, it is very satisfactory; and if they disagree, we should naturally endeavour to find out the mistake, or account for the discrepance.

Before proceeding further to impress this subject on your attention, I should remark that no very recent catastrophe has been the cause of my bringing so prominently under your notice this subject, as will be evident from the fact, that the subject of this lecture was submitted to the Board of Trade for approval on the 18th day of January. You must not, therefore, suppose that any remark contained in this paper

has special reference to any event that has occurred since that time. But, generally, it is a matter of great regret, that the use of the lead should be so much neglected, and especially by mariners leaving this port, while sailing down the Channel. Induced by circumstances to make special inquiry, I have found, in most instances, masters who use the lead in coming up Channel, acknowledge that they do not use it in their downward passage.

This general disuse of the lead is unfortunately coincident with such changes in the condition of our mercantile marine as demand rather its more general adoption. In the first place, the additional length of vessels, so advantageous in making distant voyages, renders their navigation within our narrow channels far more perilous. With the short vessels of comparatively small burden, by means of which the commerce of the past half century was conducted, the lead might have been neglected with less risk than at the present time; for now the length of some of our celebrated ships requires so large a space for wearing or staying, as to render it a fatal error to neglect any means whatever of ascertaining the ship's place, and so guarding against the possibility of making the land under unfavorable circumstances. In the second place, our iron ships, of increasing number, every day give ample testimony to the fact, that the compasses are not worthy of a great amount of confidence, even after the adoption of every known precaution, and the use of every appliance yet devised for their correction. No better advice can be given to Captains of iron vessels, than to doubt the accuracy of their compasses on all occasions when they have an opportunity of checking them; and in all cases, in which the error of one or two points involves imminent peril, to use the lead or other means of sounding, the adoption of which would, under most circumstances, furnish an efficient check, and would, in several cases, have been the means of preventing accidents, unhappily involving the loss of life. In attempting to justify the neglect of the use of the lead in going down Channel, it has been urged, that in order to heave the lead, it is necessary to slacken the speed of the ship, and that this would be attended by great disadvantage, by increasing the labour of the crew at a time when there is more than the ordinary amount to perform; that, when beating to windward, by shortening sail the ship loses way—as she does, in fact, to some extent, under all circumstances—and that this is of importance in the race which all ships are now running. And further, that in dark nights and misty weather, the chance of being run into is increased if the speed is slackened, especially as ships, to the number of thirty or more, frequently leave this port at about the same time—"high water," and with a bare wind take the same course down Channel. It must be acknowledged that occasionally there are circumstances, such as we have now stated, which would render it dangerous for a vessel to slacken her speed. In most cases, however, the lead may be used with certain advantage, and when there is no practical objection, I would recommend its adoption. There are moreover numerous sounding instruments which do not require that the speed of the ship should be slackened, as in the case of the common lead, and are yet sufficiently correct to warn the mariner of danger in

time to put the ship about. With such an instrument, in addition to the simple lead, it is the duty of every captain to be provided, for his ship may be placed in circumstances requiring its use.

It has become a question amongst practical men, to what extent the lead may be legitimately used. Some ridicule the practice, common in Her Majesty's Navy, of keeping the lead a-going under circumstances not attended by the least danger. They avow that such a practice entails an unnecessary amount of labour on the crew, and that nothing is more productive of discontent among them. But the remark we have already made in reference to dead-reckoning, may be repeated in regard to the use of the lead. If the lead be used *only* in time of absolute danger, we fear that this important service will be rendered inefficient through the inexperience of the hands employed.

There is no service which more marks a good seaman than that of being an expert leadsman. Let me then entreat the junior branch of the profession, now present, as your friend, never to feel dissatisfaction at being unnecessarily placed in the chains with the lead in your hands; never to account that employment the drudgery of your profession, for nothing, you may feel assured, will more aid your rise in its ranks. Before you have had sufficient servitude to enable you to hold the position of an officer, there is no ability of which you have a right to be more proud, than that of being expert in heaving the lead, and giving the depth of water with accuracy and dispatch. If never placed in the chains except in time of danger, your services can then be of no value. But if, on the contrary, following my advice, you make yourselves proficient by practice, you may possibly be selected by your captain for this important service in time of danger. Can any prouder position be possibly held by a youth whose period of apprenticeship has not yet expired, than that of having entrusted to his care, his ship, messmates, and it may be hundreds of passengers; or that of knowing that, in the uncertainty in which all are placed, his voice is attended to with the greatest anxiety.

It is said that, at the time when the sea-songs of Dibdin were popular, the grandsire of our beloved sovereign attended with more than ordinary interest to that of heaving the lead, and that it was frequently sung at his special command. Never consider, my young friends, *that* duty a drudgery which was deemed worthy the peculiar notice of a king. My remarks on this subject have been especially elicited by the knowledge of the fact, that good leadsmen are becoming more and more scarce at this port;—so rare, indeed, that a captain, a few days since, informed me that after shipping a full crew of twenty-five, all with good characters for ability, he himself was obliged to go into the chains. Depend on it this state of things will not be suffered to continue long. The time must come when you will only rise in your profession, by first becoming expert leadsmen; and if to-night I have succeeded in impressing on the minds of any of my younger friends present, a spirit of emulation which shall hereafter result in their attaining proficiency in the use of the lead, I feel satisfied that my time has been usefully employed, and that one of the objects of the Board of Trade in directing these lectures to be delivered, has been to some extent accomplished.

THE MERCHANT SERVICE.

[The following extract from a letter in the *Times*, and written by CAPTAIN ROBERT METHVEN, P. & O. Co. Service, a gentleman who has had a large experience, will be read with interest by all who have the welfare of the merchant service at heart:—]

A parliamentary paper, lately issued, showed that the number of complaints made by seamen for the recovery of wages in 1852, in the Thames and Greenwich Police Courts, were 244, and in Liverpool 161, and the great majority of cases were decided in favour of the complainants, the amount of wages recovered being £2,273 6*s*. This is a significant fact as to the desire of ship-owners to act considerately by their crews. There is also a want of sympathy, if not a wide-spread dislike, on the part of merchant officers towards seamen, which gives "poor Jack" but a moderate chance of a fair hearing, unless he steps to the front himself, and by means of a "strike" exacts a juster appreciation of his value. I fear the press will not get one of its staff to go afloat and try what a dark breezy night on deck is, and a wet bed afterwards;—as a merchant officer I would therefore fain put in a word, for I have been familiar with such things all my life, and am warmly attached to our seamen.

Every one must desire that we should have a well affected and large supply of seamen throughout our whole seaboard, and it will forward this end if some public attention is turned to discipline, berthing, and comfort afloat; the well cared-for seaman will be found to be the cheapest—he will have twice the stamina, and give twice the work. We may legislate for the merchant service, but unless our legislation is rightly interpreted by those who have the application of it, instead of good we have ill-feeling generated. It cannot be maintained that we sufficiently appreciate either good seamanship, or the perils and exposure of a seaman's calling; otherwise, why is it that our best men are to be found anywhere but in England, wandering homeless and friendless, while really good men who know their work are only to be met with by twos and threes on board of a first-class merchant ship. Among other causes it was alleged, in the loss of the *Tayleur*, that there was no lead going; now, this ship had but a sprinkling of Englishmen, and I can safely say from my own experience that in a crew of eighty I considered myself lucky if I had two good leadsmen out of the lot. Excepting the Bengal bugalow or the Greek coaster—with a bright exception here and there in which Aberdeen is entitled to a lead—we send the worst rigged ships to sea in the world. English officers and crews, whether seamen or not, by a sort of prescribed tradition, are supposed to be able to get along, whatever their means, or however ignorant of their work, or inadequately cared for. Any officer who loves his profession or hopes for its improvement must look with interest on the seamen of the Tyne, for there is no better school than the coasting trade for the lad who desires to be a sailor; and that most rare and valuable class of hand, a good leadsman, can only be made by very early familiarity with the practice of taking

soundings. There is a knack and sensitiveness to the lead taking the ground which can only be acquired early in life.

The Tyne seamen seemed, however, to be over estimating themselves, and carrying their strike too far; but if they had no actual well-grounded grievance before they knocked off, the Tyne ships are different from any merchant ship that I have sailed in. Doubtless, in the wide range of the merchant service of England, there must be many instances to the contrary, but in my own actual experience I have never sailed in a merchant ship in which the seamen had not just ground to be dissatisfied, from causes beyond the remedial power of the officers.

In the report of the open air meeting of the 20th of March at Shields, mention was made of foreign seamen being more valuable. A discontented English seaman is certainly not a person to fall in love with, but, taking them just as they are, and rare as good seamanship is to be found among them, I may be permitted to say that I prefer an English crew, and I have commanded men of every hue and of every tongue. They have been greatly neglected; their calling, as a trade, requiring skill, hardihood, and courage, has not been rightly estimated, and their necessities and comforts have not attracted sufficient attention; no wonder, therefore, that merchant-seamen give trouble; nor, when we may be said to have thus fostered the habit of discontent, when it breaks out without sufficient reason, are we entitled to consider ourselves wholly free from blame.

Things are now so bad that we must hope we are at the lowest point of the turning; we have neither *seamen* nor *seamanship*—and such a system of duty and discipline as practically to deserve the name of neither. Morality among seamen, and respect for obligations undertaken, are of the scantiest kind; and when it is desirable that it should be an increasing, concentrated, and thriving class, it is notoriously improvident and scattered over the world.

CAPTAIN NOBLE AND THE TAYLEUR.

By desire of the Board of Trade, the Liverpool Local Marine Board having made inquiry respecting the loss of the *Tayleur*, with a view to ascertain whether Capt. Noble is from incompetency or other causes, specified in the Mercantile Marine Act, unfit to discharge the duties of a Master, they have reported unanimously that, notwithstanding this serious disaster, they are convinced that he possesses skill and ability both as a navigator and a seaman, and that they recommend the Board of Trade to renew his certificate of competency. It was proved to them that the Owners made the usual arrangements for providing the ship with accurate compasses, and, that Capt. Noble,

besides, took great pains to test their correctness. The report furnishes the following important statement:—

"Notwithstanding these precautions, however, it appears to this Board, that the *Tayleur* was brought into the dangerous position in which the wreck took place, through a deviation of the compasses, the cause of which they have been unable to determine. This Board would call particular attention to the fact that numerous instances have been brought under their consideration, of compasses having been proved greatly in error on board of both wood and iron ships, while navigating the Irish Channel, and which deviation is not accounted for by any theory at present. They, therefore, strongly recommend all shipmasters to doubt the accuracy of their compasses, and to adopt every means in their power to check and to test them."

HONORARY REWARDS.

The American barque *Greenpoint* was run down and sunk by the *James Stewart*, also an American, off the Chincha Islands, and her Captain (the principal owner of the vessel, which was uninsured) lost all his effects. Captain KENNEDY, of the ship *Wallace*, of Liverpool, which was loading at the Chincha Islands, immediately commenced a subscription on his behalf, which he headed himself, and by his instrumentality about £130 was raised among the Masters of the vessels then at the islands, and handed by Captain Kennedy to the American shipmaster at Callao. Such generous and disinterested conduct was not forgotten by the latter, and last week a handsome silver trumpet arrived at Liverpool from New York for Captain Kennedy, bearing the following inscription:—"Presented by Captain Robert M'Cormack, of the late barque *Greenpoint*, to Captain Kennedy, of the ship *Wallace*, the representative and one of a number of British captains at the Chincha Islands, as a token of gratitude for their spontaneous and unexpected assistance in an hour of need.—Callao, *Aug.* 1853."

Secretary Marcy, (U.S.) has forwarded to the collector of Barnstaple, for Captain YOUNG, of the American whaling schooner, *Wadron Holmes*, a beautiful gold medal, a testimonial from the British government for saving the crew of the British barqus *Cairo*, in 1853. The medal was accompanied with a note from Mr. Crampton, the British Minister at Washington.

CERTIFICATES CANCELLED.

Charges of gross and repeated acts of drunkenness having been preferred against William Fletcher, late master of the *Shaw*, an investigation has been instituted by the Local Marine Board, under the provisions of the Mercantile Marine Act; and that Board having found the defendant guilty of the above charges, the Board of Trade have directed that his certificate as master be cancelled.

Alexander Cooper, having been convicted before the magistrates at Dundee, of the crime of desertion, from the ship *Ophir*, at Callao, and sentenced to six weeks' imprisonment, the Board of Trade have determined to cancel his certificate as first-mate.

LEGAL DECISIONS.

Admiralty Court, *March 24th.—Collision.—The Edward Johnston*, of the burthen of 997 tons, bound from Liverpool to Mobile with a light cargo, and being in ballast trim, and the *Wansfell*, of about the same tonnage, from Bombay to Liverpool, laden with cotton, came into collision with each other near the Skerries Lights at 2 A.M., on the 1st of December last. According to the statement of the *Edward Johnston*, the wind was S., inclining to the W., and she was sailing close-hauled on the port tack, heading W.S.W., when she descried the *Wansfell* right ahead. She immediately luffed until her sails began to lift, and, perceiving that a collision would occur, put her helm down to ease the blow. She contended that the *Wansfell* had the wind free, well aft, and ought to have given way. The *Wansfell* represented the wind as being south-east, and alleged that she was close-hauled on the starboard tack, heading north-east by east. On the *Edward Johnston* being reported, she instantly luffed, and came up a point and a half, but the *Edward Johnston*, instead of giving way, as she was bound to do, suddenly starboarded her helm, and thus caused the collision. Cross-actions were entered by the respective parties. The court was assisted by Captain Pixley and Captain Weare.

The Court, addressing the Elder Brethren, said :—Gentlemen, this collision, as you have heard, took place early in the morning of the 1st of December, in the Irish Channel. Little has been said about the state of the weather at the time when the collision took place, but it does not appear to me, though it might have been rather hazy and rainy, that the state of the weather was such that it could be said that the collision was the result of inevitable accident. There is some discrepancy in the evidence produced by these two vessels, and more especially as relates to the quarter from which the wind was blowing. It is alleged on the one side that the wind was S.E., and on the other side that it was S., there being a difference of four points. It is said on the one hand that the *Edward Johnston* was close-hauled, and upon the other that the *Wansfell* was close-hauled. It is impossible for me to state from which quarter the wind blew, and I should think it would be somewhat difficult for you. If, however, the wind was between the two statements, then it might be that neither vessel was close-hauled, looking at the course which they pursued. The representation of the *Edward Johnston* is that she was close-hauled on the port tack when she saw the *Wansfell;* that as soon as she saw the light of that vessel she luffed, and it is alleged that she luffed again upon her nearer approach. We will admit, for the purpose of the questions which

I am about to put to you, the statement made on behalf of the *Edward Johnston*, and we will consider that the *Wansfell* was on the starboard tack, sailing free. Now the questions on which I shall have to request your opinion are of considerable importance to the result of this case, and the first will be—whether the *Edward Johnston* was to blame for having luffed, and for not having ported; secondly, supposing you to be of opinion that she was to blame, whether the collision was occasioned by the not porting her helm. It is your duty always to bear in mind the act of parliament which was passed for the government of cases of this description. I have no right to speculate as to whether the act of parliament was right or wrong; it is my duty and yours to carry it into execution to the best of our judgment. The words are these—"That whenever any vessel proceeding in one direction meets a vessel proceeding in another direction, and the master or other person having charge of either such vessel, perceives that, if both vessels continue their respective courses, they will pass so near as to involve any risk of a collision, he "—that must be the master of the vessel—"shall put the helm of his vessel to port, so as to pass on the port side of the other vessel." Now, we have nothing in the nature of a channel to form an impediment to this rule. I therefore leave that entirely out of consideration, and put the question to you, whether the two vessels were not approaching each other in such a course, that if they continued there was clearly a risk of collision, and whether, under these circumstances, it was not the bounden duty of the *Edward Johnston* to port. Instead of that, she starboarded her helm. If you should be of that opinion, the next question will be one of considerable importance; namely, whether the collision was occasioned by the non-observance of this rule. It appears to me, looking at the facts of this case, that the collision may have been occasioned either by the non-observance of this rule, or by the misconduct or neglect of those on board the *Wansfell*. I now come to the case of the *Wansfell*. She represents herself to have been on the starboard tack, close-hauled, and that the wind was S.E., inclining to W. She says her own course was N.E. by E., so that you have seven points between the wind and her own course. Looking at the representation of the *Wansfell*, I cannot satisfy myself that she was as close-hauled on the starboard tack as she represents herself to have been. The next question is, whether, under the circumstances I have stated, it was not her duty to have ported, and to have ported in time, because I think the evidence in this case clearly shows that, if each vessel had discharged her respective duties, no collision would have taken place, therefore the question will not only be, whether she was not bound to port, but to port in time. It is not my intention to occupy your time in going through it, but there is important evidence in the case, and, according to her statement, she luffed up no less than three times.

The Elder Brethren having consulted, Dr. Lushington, said:—The gentlemen by whom I am assisted are of opinion the *Edward Johnston* was clearly to blame, and this is also my opinion. She is not only to blame, but the collision was occasioned principally by her conduct. It is clear, therefore, whatever may be the conduct of the *Wansfell*, the *Edward Johnston* cannot recover by the terms of the act of parliament, because, where the collision has occurred by the non-obedience to port the helm, it is directed by the act of parliament that the vessel should not recover in that action. There is a cross-action brought by the *Wansfell* against the *Edward Johnston*, and the gentlemen are of opinion that the *Wansfell* is to blame also, for she was, in fact, sailing free, and she did not do her duty by porting her helm in time; therefore, the result is that, neither succeeding in the action, each must pay their own costs.

ADMIRALTY COURT, DUBLIN.—*Claims of Receivers of Droits.—The American Ship Robert Kelly, and Cargo.*—Dr. Stock sat in this court to dispose of the claim of John Walsh, Esq., Receiver of Droits, who claimed £61 fees under the Wreck and Salvage Act. The fees were—£50 for adjudicating on the ship, as a derelict, and certain day fees, amounting to £11. Dr. Radcliffe was heard in support of the right of the Receiver of Droits, and contended that, as the master and crew had all left the vessel, and she being found abandoned, no party could repossess themselves of the vessel unless going through the forms of the 9th section of the act, which gave the Receiver a right to a fee of £50; and that, as to

the day fees, they were also payable to the receiver, under the 19th section—£2 for the first day, and £1 for each day the Receiver was in possession; and as the Receiver seized on the 8th, he was entitled to his fees up to the 16th of March.—Dr. Hayes was heard for the *Robert Kelly*, and argued that these officers, Receivers of Droits, instead of benefiting the Mercantile Interest, were becoming a very useless and heavy tax on shipowners, He then briefly stated the facts to the Court, to show that the vessel never was derelict: but he more especially pressed on the consideration of the Court, in relation to the Receiver, that the facts as proved showed clearly that Captain Laurence, the master of the vessel, was on board with his mate when the ship entered Kingstown Harbour, and that the mate actually anchored the *Robert Kelly*, so that it was idle to suppose for a moment that the ship was derelict; and that the Receiver of Droits, when he boarded her in Kingstown Harbour, found the vessel in possession of her master. This the Receiver denied; but the evidence showed that he boarded the ship the previous day on the banks, and knew well who was the Master, and that his services were refused. The learned counsel contended that the Wreck and Salvage Act never contemplated the fee of £50 under the 9th section, unless in a case of total abandonment, where neither Master nor Owners were forthcoming, and where the Receiver had to adjudicate on the claims of the Owners and Salvors; and with respect to the fees of £2 and £1 per day, that same were fees payable to the Receiver only where he was employed "actually in the saving and preserving" of property, which in the present case was not so—as the vessel was safe in harbour.

Dr. Stock, in delivering judgment, stated that his opinion was quite clear on the statute, that the receiver was not entitled to the £50 in the present case, as there was no dereliction established, and the fact of the Admiralty warrant having issued, wholly put an end to the functions of the Receiver. With reference to the day fees, the court was also of opinion that the Receiver was not entitled to any fees after the warrant issued; but as the Receiver had claims of Salvors lodged with him on the 8th, he would allow him £5 fees altogether from the 8th to the 10th March inclusive.

DUBLIN POLICE.—*Wreck of the Scotland.—Claim of the Receiver of Droits for Fees.*—(Before Mr. O'Callaghan.)—Several parties were convicted at this office for having illegally in their possession a quantity of fire-arms and other articles identified as belonging to the wreck of the *Scotland*. Mr. Walsh, Receiver of Admiralty Droits, attended the investigation, and claimed the possession of the property under the 9th and 10th Vic.—The owners Messrs. Tobin and Son, of Liverpool, subsequently, through their agents, made an application that the articles found in the possession of the convicted parties should be delivered up to them, which was resisted by Mr. Walsh, who contended that the applicants, in order to repossess themselves of the property, should give proof of ownership, under the 9th section, which entitled him to certain fees.—Mr. Gibbon, on the part of the owners, now argued that, under the Wreck and Salvage Act, the right of the Receiver to his fees was only where the vessel was derelict, which did not take place in the present instance.—Mr. O'Callaghan having intimated an opinion favourable to counsel's view of the law, said that he had consulted with Dr. Kelly, and, as he had anticipated, he concurred in his (Mr. O'Callaghan's) opinion. His impression was, there was no evidence of the vessel having been derelict; but that, on the contrary, any evidence offered on that point went only to show that she was in peril. He also referred to his having heard the case in which the parties were charged with having illegally in their possession a quantity of firearms, under the 5th of the Queen, and that there being no evidence to establish the property was a wreck, he had decided it under that Act, and that he would be guided as to the eventual disposal of the property by another section of the same Act, which gave the divisional Magistrate power over property similarly circumstanced. Dr. Kelly was clearly of opinion that this property, the vessel not having been shown to be derelict, fell entirely within the operation of the 5th of the Queen, and that the Receiver of Droits could only establish his right to fees where he showed the property was derelict, or came within the various circumstances mentioned in the 9th and 10th Victoria. He would, therefore, direct the property to be given up to the persons representing the owners.

COURT OF QUEEN'S BENCH.—*Seamen's Wages.—Increasing the Rate of Pay Abroad.*—HARRIS *v.* CARTER.—Mr. Millward moved for a rule to show cause why the nonsuit entered in this case should not be set aside and a verdict entered for the plaintiff, with £29 5*s.* damages. This cause was tried at Liverpool, before Mr. Baron Platt. The plaintiff was a sailor, and the defendant the Owner of a vessel in which the plaintiff had engaged himself. The voyage was to be from England to the port of Melbourne, and thence to India and China and home, and the wages agreed on were £3 a month. Forty men were shipped on board the vessel for the outward voyage. Of that number twelve were supernumeraries, and twenty-eight were no more than the ship, which was a fine large ship, required for its proper management. It was a positive understanding that twenty-eight were to remain for the voyage out and home. The ship arrived at Melbourne, and then the temptation of the gold diggings offering itself to the men, some of them quitted the ship, and the Master thought it would be for the interest of his Owners to alter the articles, and to secure the services of the men by giving them £6 per month. The question now to be determined, related to this increase of pay.—Lord Campbell : It has been decided that even where there is an express promise to pay, occasioned by some compulsion on the Master, the promise is void. Mr. Millward admitted that that had been laid down as the rule of law, but there were circumstances in this case which made such a rule inapplicable. Here nine of the crew deserted, and then a tenth. After the desertion had begun, the Master called the crew aft, and told the men that if they would assist in getting out the cargo, he would discharge the men there, and put an end to their articles. The men asked to have that promise in writing, to the effect that they might then leave the ship if they liked, but if they did not, that then they should have the rate of wages which was then given in Melbourne. This was done, and the document was signed before a magistrate at Melbourne. The cargo was discharged in due time, but whilst they were in the act of discharging some other desertions took place, and one man was voluntarily discharged by the captain.—Lord Campbell: Then the question is whether the captain has authority to bind the Owners. Mr. Millward said that the Master was the person authorised to make contracts on their part, and here the Master had told the men that he was authorised to raise the men's wages, or to discharge them, or to do what he should think fit. On the voluntary discharge of the man at Melbourne arose the question of misdirection. The counsel for the plaintiff pressed the learned judge to put to the jury the question whether this was a voluntary discharge of the particular man.—Lord Campbell: How would that affect the question?—Mr. Millward: His discharge would throw on the rest a greater portion of labour, and that would bring the case within the language used by Lord Ellenborough in the case of "Smith *v.* Merritt," and would enable the plaintiff to maintain the action. Here the master took fresh men on board, and gave them £45 per man for the run from Melbourne to Bombay, which was a payment at the rate of £7 or £8 per month. Even then the ship went to sea with eighteen instead of twenty-eight men ; but the men who had staid by the ship, of whom the plaintiff was one, believed that they were to have £6 per month according to the new agreement which had been duly entered into by the Master at Melbourne, in the presence of the magistrates there. The ship afterwards came to England, and then the Owner refused to abide by the new articles ; and the plaintiff, who was one of the men that had staid by the ship, brought this action on the agreement. The learned judge nonsuited the plaintiff on the ground that the old agreement remained in force, and that the new one was totally inoperative ; but that was an error, for as the Master had himself thought fit voluntarily to discharge some of the men, he broke the original engagement, and he then made a new one, which, having made of his own free will as the agent of the Owner, was binding upon him.

Lord Campbell thought that this nonsuit ought not to be disturbed. If the plaintiff had been in a situation under which he was released from the articles he had first signed, he might have entered into a fresh engagement, on which the Owner would have been liable. But that was not the case. The plaintiff never was released from the original articles, and under these circumstances the Master had no authority to make a new agreement which was binding on the Owners.

No doubt, during a portion of the voyage, circumstances might arise which would authorise the Master to discharge a part of the crew, or to change the voyage, and to enter into a fresh contract; but nothing of that sort had occurred here. The voyage was to Melbourne, then to Bombay and back, and the plaintiff undertook to perform that voyage out and home at £3 per month. That was a valid agreement, and what took place afterwards was immaterial. There was nothing to render this new agreement valid. The court could not depart from that ground of public policy which had been adopted in previous cases, and it would be most mischievous if such an agreement as this new one could be held good.

The other judges concurred, observing that they should be sorry to think that any doubt could be entertained on the matter.—Rule refused.

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from March 25 *to April* 25, 1854.

Navigation into Spithead.—It having been determined, in communication with the Right Honorable Commissioners of the Admiralty, that a Floating Light Vessel shall be placed to mark the Channel between the Horse and Warner Shoals:—

The said vessel will be moored in a suitable position on the West side of the Channel near to the Warner Shoal; and the Light exhibited thereat on the evening of the 1st of May next, and thenceforth continued every night from sunset to sunrise. At this station a Single Revolving Light of the natural color will be shown.

Denmark.—All the Floating Lights are now laid out and lighted.

Moreover, it is made publicly known, that the light-vessels at "Lœsso Trindelen," at "Kobbergrunden," and at the "Anholt Knob," are in the future to be laid up on the 31st of December, supposing the ice permits them to remain on their stations till then; and they will not then be laid out again before the 1st of March.

That the Light Vessels in Drogden and the Lœsso Strait, are ordered to keep their stations as long as the ice permits them to do so. If the floating ice should force them to leave their stations, they will not be laid out again before the 1st of March.

When the Light Vessel in the Lœsso Strait is not on her station on account of ice in the Cattegat, a white flag, with a blue perpendicular stripe, will still, according to the notification of the 9th of November, be hoisted on the Light Houses of Haustholm and Skagen; if, from other reasons, it shall be obliged to leave the station, a red balloon will appear on the Lighthouses of Skagen and Haustholm.

Scotland.—A new Revolving Light at North Ronaldshay, and alteration of the Startpoint Light from a Revolving Light to a Fixed Light.—1. *North Ronaldshay Lighthouse.*—A Lighthouse is being built upon the island of North Ronaldshay, in Orkney, the Light of which will be exhibited on the night of Friday, the 1st of September, 1854, and every night thereafter, from the going away of daylight in the evening to the return of daylight in the morning.

The Lighthouse is in N. lat. 59° 23′ 15″, and W. long. 2° 23′ 38″; it stands on the northern point of the island of North Ronaldshay, and by compass it bears from Moulhead of Papa-Westra W.N.W. ¼ N., distance 15 nautic miles; and from Start-Point of Sanday Lighthouse, S.S.W. ½ W., distance 6½ miles.

The North Ronaldshay Light will be a Revolving Light, producing a bright flash of the natural color once in every ten seconds. Visible all round the compass: 140 feet above the level of the sea; the Light will be seen at the distance of about 18 nautic miles.

II. *Start Point Lighthouse.*—The Start Point Light, which is 6½ miles from the North Ronaldshay Light, being at present a Revolving Light, producing a bright flash once in every minute, on and after the night of Friday the 1st of September, 1854, when the new Revolving Light at North Ronaldshay is to be exhibited, the present Revolving Light at Start-Point will be changed to a Fixed Light of the natural color.

Hever Stream, Entrance to the Port of Husum.—A Red 9-foot Buoy marks the entrance of the Channel. Inside, the Channel is marked with 20 Black Buoys, numbered in succession 1 to 20, to be kept on the starboard side, and 11 White Buoys on the port side, marked A to L, successively. After passing the Black Buoy No. 2, the bar is clear, and 6 fathom water is found. Opposite the Black Buoy No. 10, is a Black and White Checkered Buoy, which marks the entrance to Suderoog, Pellworm, and Hallig, and to be kept on the starboard hand by vessels proceeding to either of the above places. If the coast should be made north or south of the above line, the entrance Buoy may be found steering in a northerly or southerly direction in 5 or 6 fathoms. From the north, the Seasands' Beacon is a good guide, and from the south, St. Peter's Downs.

NAUTICAL MEMORANDA.

The Falkland Islands.—The captain of the *Great Britain* makes a very favorable report of Stanley Harbour as a place of call for steamers. He says:—"The government charts are exceedingly correct; the land, as you approach it, is made out without any difficulty, and we saw Pembroke Point and its beacon (now to be superseded by a lighthouse) at the distance of about seven miles. The harbour itself is like a large dock, secure from all winds, and with an entrance

sufficiently wide for a good smart sailing vessel to beat through with ease. All the dangerous points are distinctly marked by the seaweed. The anchorage is excellent, varying from four to five fathoms at low water. The facility for watering ships is good; a reservoir, holding about 200 tons of water, communicates by means of pipes with the end of a jetty, where, even when the tide is out, there is always about three feet depth of water, which is sufficient for a flat-bottomed boat to float off 10 tons at a time. The governor promised that, should Stanley become a port of call for steamers, a floating tank should be built, so that water could be alongside the ship immediately on her arrival, and pumped into the tanks or casks as the case may be. There are considerable herds of cattle on the islands, and, when put up to feed, their beef is very good; vegetables of the more ordinary kind, such as potatoes, cabbages, and turnips, can be had when in season; ship chandlery and grocery stores can also be purchased to a limited extent. Labour is scarce, as the population of Stanley (the only settlement) is only about 400; but every year, as the islands become better known, this want will, no doubt, be less felt. I should add that the hulk for coaling the *Great Britain* was placed in the most cenvenient situation."

Pirates in the Eastern Seas.—Captain G. W. Dare makes the following report to Lloyd's agent at Calcutta:—

On my passage to this port from South Australia, in passing to eastward of the Nicobar islands, and when about three miles to windward of the island of Comorta, on the 9th of January, at 8 a.m., discovered a large boat, about half-way between ship and the shore, gradually approaching closer and closer, and very evidently with the intention of intercepting the vessel before she passed the N.E. end of the island. At ten, as the boat drew nearer, found her to be about 60 feet long, painted red, and full of men, and altogether bearing a very suspicious appearance. Having by this time brought the N.E. end of the island to bear about four points on the lee bow, checked the braces and made all possible sail to N.W., and although the boat hoisted a sail to assist them, they lost so much ground by 11 o'clock that they gave up the chase.

Although Horsburgh's Directory describes the inhabitants of these islands as being friendly, I very much doubt their pacific intentions in the present case.

Patras, March 15.—For the information of masters of vessels frequenting this port, I have to give notice that *a mole, parallel with the old one, is in course of construction* in the most westerly part of the town, opposite St. Andrew's Church. It is already above 300 yards long; and, therefore, vessels arriving in the night time must avoid keeping too close to the shore.—A. LYONS.—*To the Editor of the Shipping and Mercantile Gazette.*

The probable existence of an island, or shoal, in lat. 50 50 *S., long.* 77 30 *E., and the somewhat unusual prevalence of N. and N.E.*

winds in that latitude, the course of great circle sailing to Australia.—Captain Inglis, of the iron ship *Gauntlet*, of Liverpool, left Gravesend on the 4th of September, and on the 21st was in lat. 14° N., long. 27° W., thence to the Line, with light winds and calms. He crossed the Line on the 7th of October, and passed the Cape on the 1st of November, in lat. 48° S., and passed Karugolen's island on the 11th, in lat. 53° S. He here encountered continual snow storms for a fortnight, accompanied by N. and N.E. winds. In lat. 50° 50′, long. 77° 30′, he passed over a bank of shoal water, the water suddenly becoming of a muddy appearance, and he has no doubt but that he passed within a very short distance of some hitherto undiscovered shoal or island, as the water became perfectly smooth; but, in consequence of the heavy fall of snow, Captain Inglis was unable to make such minute observations as he otherwise would have done. This shoal, or island, was observed by the crew and passengers, as well as by the captain, who called them to witness the discovery he had made. Observing the blue water ran to the S.E. off the shoal, he steered away direct S. for one hour, going 13 knots, and then dropped suddenly into blue water. Captain Inglis strongly recommends all navigators running from England to this port, on a great circle, to keep a look-out when they arrive in this latitude. He had, from this point to Melbourne, a very tedious passage, encountering N.E. winds. The captain appears to recommend this course from England, but at the same time would advise Masters to have their vessels efficiently manned, an advantage which, unfortunately, he does not appear to have been possessed of.—*Melbourne Argus.*

New Granada Navigation Laws.—Her Majesty's Consul at Carthagena, notifies that the government of New Granada have thrown open the coasting trade of that country to foreign vessels; and further reports the imposition of the following tonnage dues upon foreign vessels, viz.:—

On every vessel not exceeding 100 tons, four reals for every Granadian ton. On every vessel over 100 tons, four reals on each of the first 100 tons, and two reals on each ton exceeding that amount. This duty will only be levied on foreign vessels at the first port in New Granada at which they may touch.

Coal Trade at Havana.—Her Majesty's Consul-General at Havana notifies a decree of the Cuban government, extending the privileges of exemption from tonnage and other dues to vessels bringing coals to the ports of Cuba as follows:—

His Excellency the Governor Captain-General, and Delegated Superintendent of the Royal Revenues of Cuba, has thought it convenient to announce to the public, for their information, that by Royal Order of the 24th December last her Majesty was pleased to determine as follows:—

1. That the vessels which enter the ports of this island laden with coals in quantity equal to, or greater than, the measurement expressed in their certificates of registry, shall continue to enjoy the

exemptions which have been conceded to them, even if they should bring other cargo besides.

2. That the vessels importing coals only, but in less quantity than their measurement, shall only be entitled to be relieved for the part occupied by the coal, and be subjected for the difference to the full payment of the tonnage, although with the enjoyment of the other exemptions.

3. That the vessels which, besides coals in quantity equal to their measurement, bring other cargo, in whatever quantity, are in the same classification as to the tonnage duty, but are subject to the payment of the clearing the harbour (ponton), health visits, registries, and the rest corresponding.

4. And last, that the vessels which, upon their discharge of coal, show a proportion less by 20 per cent. than the quantity upon the manifest or the certificate of the respective consul, shall lose their right to all favor, and be subjected to what is the rule generally for other vessels of trade, it being the pleasure of Her Majesty that the period for such exemptions is to be understood for one year, to be counted from the date of this announcement, within which term they shall mark its effects, in order that, with a thorough knowledge thereof, in due time, may be either definitely confirmed or revoked, as it may be found convenient.—*Havana, Feb.* 9, 1854. MANUEL DE CARBAJAL, Secretary.

NAUTICAL NOTES.

The Golden Age.—The Short Passage to Australia.—The American paddle-steamer *Golden Age*, left Liverpool in November last with a small number of passengers and an unremunerative although a considerable cargo, the post-office authorities having refused to pay her an extra sum for taking a mail. She reached the Cape in twenty-six days and a half, thus making to that point the shortest passage upon record. Indeed, the difference from any passage previously known is alleged to have been as much as eight days. At the Cape she was detained ten days coaling, but she nevertheless reached King George's Sound so as to effect the entire passage from Liverpool to Australia in sixty-one days, including detentions, and in an actual running time of forty-seven days. Considering that in future trips the advantages of experience would enable distances to be saved and greater speed to be attained, the possibility of the communication to Australia being regularly brought within fifty days, even by the Cape route, seems consequently to have been demonstrated. According to the statements of the commander, Captain Porter, he made the whole distance to the Cape with four furnaces blocked off, and with a consumption of only thirty tons of coal per day, five days' consumption remaining upon arrival in port. By less economy, therefore, greater results might have

been accomplished, and it is believed, moreover, that 300 miles might be saved by stopping at Goree to coal. Taking these things into account, Capt. Porter asserts that the *Golden Age* could regularly perform the run from Liverpool to the Cape in twenty-three days.

East India and China Shipping.—The East India and China Association have published their usual comparative statement of the number of ships, both British and foreign, with their aggregate tonnage, entered inward, and cleared outward with cargo from and to places within the limits of the East India Company's charter, from the 1st of January to the 31st of March, in the years 1853 and 1854. According to the statistics of vessels entered inward, the port of London shows an increase of 35 vessels and 18,734 tonnage, the difference between 187 vessels with 97,595 tonnage in 1854, and 152 vessels with 78,861 tonnage in 1853. Liverpool exhibits an increase of 10 vessels and 7,814 tonnage, the arrivals in the former period having been 63 vessels, with 39,095 tonnage, and in the latter, 53 vessels, with 31,281 tonnage. Bristol figures for an increase of 3 vessels and 3,166 tonnage, the difference between 16 vessels, with 7,118 tonnage, in 1854, and 13 vessels with 3,952 tonnage in 1853. The return for the Clyde presents an increase of 8 vessels and 4,141 tonnage, the arrivals in the former period having been 24 vessels, with 10,052 tonnage, and in the latter 16 vessels, with 5,911 tonnage. The total increase exhibited is 55 vessels and 33,490 tonnage, the difference between 290 vessels, with 153,860 tonnage, and 235 vessels, 120,370 tonnage. The principal arrivals have been from Madras, Bombay, Ceylon, Singapore, Mauritius, New South Wales, Phillippine Islands, and the Cape of Good Hope. The statistics of vessels cleared outward show a general decrease. In the case of the port of London it is 59 vessels and 11,748 tonnage, the difference between 168 vessels with 88,016 tonnage, in 1854, and 227 vessels, with 99,764 tonnage, in 1853. Liverpool figures for a decrease of 43 vessels and 13,341 tonnage, the departures in the former period having been 73 vessels, with 46,068 tonnage, and in the latter, 116 vessels, with 56,409 tonnage. Bristol presents a decrease of 1 vessel and 211 tonnage, the difference between 2 vessels with 473 tonnage, and 3 vessels with 684 tonnage. The return for the Clyde exhibits a decrease of 19 vessels and 1,803 tonnage, the departures having been 24 vessels, with 11,803 tonnage, against 43 vessels, with 13,606 tonnage, in 1853. The total decrease, as exhibited by the general return, is 119 vessels and 26,419 tonnage, the difference between 267 vessels with 146,360 tonnage, and 386 vessels with 172,779 tonnage. The chief diminution has occurred in the departure of vessels for New South Wales, New Zealand, &c., the decrease having been 71 vessels; but the amount of tonnage in those cases has not seriously declined, being only 6,873 tons below the corresponding period of last year. The other items of decrease are connected with the number of vessels which have sailed for Calcutta, Bombay, China, Singapore, and Penang, Java, and Sumatra, and the Cape of Good Hope.

MATERIALS OF WAR.—TREASURY MINUTE.

THE Lords Commissioners of the Treasury have again had under their consideration the proclamation prohibiting the exportation of arms and other warlike stores, in consequence of numerous applications from traders to be permitted to follow their business when the articles are not intended for warlike purposes. Their lordships have issued a minute, stating that while they are desirous of using every means in their power to prevent the improper export of such articles, they are, nevertheless, anxious to interfere as little as possible with the trade of the regular merchants, and they have, therefore, with the view of accomplishing both objects, given directions to the Commissioners of Customs, in order that they may be enabled with more safety to permit the export of ship-building materials and other prohibited articles, to take bonds from the shippers, which shall specify:—1. The description of the article shipped. 2. The port of destination. 3. The names of the persons for whom the goods are intended. 4. The purpose to which they are to be applied. 5. If for ship-building, the name of the builder, and the name of the person for whom the ship is building, and the service for which it was intended; and which bond shall only be discharged by the production of the certificate of the British consul at the port of destination that the said goods have been so landed, and that all the terms of the bond have been, so far as he can judge, complied with. In transmitting these directions from the Treasury to the principal officers of the Customs, at the several ports throughout the kingdom, the commissioners have caused two forms of bonds to be prepared, viz.: 1. For the exportation of arms, &c., to a foreign country. 2. For exportation to the British colonies; and they have directed their officers to forward to them copies of all such bonds as soon as they shall have been executed, in order that they may be sent to the consuls, or other proper authorities, at the port of destination, for their information and guidance, and to enable them to co-operate, in carrying out the intentions of Her Majesty's government. The board also rely on the vigilance and discretion of the officers of the Customs department, in giving effect on the one hand to the object of the proclamation, without on the other hand impeding the legitimate course of trade; and in all cases of doubt or difficulty, they are immediately to apply to them for instructions. The commissioners have, at the same time, directed the principal officers at the several ports to enjoin their officers to keep their attention upon goods brought for shipment; and in cases of reasonable suspicion that the packages contain prohibited articles, to report the circumstances, in order that, should it be deemed expedient, the packages may be examined under the provisions of the 119th section of the Act 16 and 17 Vic. c. 107.

[*All communications to be addressed* "EDITOR OF THE MERCANTILE MARINE MAGAZINE, *care of Mr. W. Foster*, 114, *Fenchurch Street, London.*" *N.B. The real name and address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*]

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

JUNE, 1854.

ON STORM INSTRUMENTS.

1.—*Col. Sir William Reid's Storm Cards or Storm Circles.*
2.—*Mr. Piddington's Horns.*
3.—*Mr. Birt's Hurricane Circles.*
4.—*Col. Lloyd's Storm Pointer.*
5.—*Commander Becher's Storm Compass.*
6.—*Capt. Sedgwick's Storm Charts.*

THE increasing interest manifested by the Mercantile Marine in all that relates either directly or indirectly to *storms*, the further interest which ship owners and underwriters have in the preservation of vessels from the disastrous effects of hurricanes, and the still more extensive interest which a large commercial country such as England has in the safe transit of her exports and imports, will be a sufficient apology for introducing to the notice of the reader the contrivances, mentioned at the head of this article, for assisting mariners in ascertaining correctly the bearing of the centre of a revolving storm from the position of the ship.

Without doubt, the great point with a commander when overtaken by a storm, or when having sailed into one, is as early as possible to find out his whereabouts, to know whether he be near the margin or not far from the centre, and especially to ascertain *in which direction the centre bears from his ship.* With this important information he knows how to act—he is better prepared for avoiding the threatening vortex; in a word, he is able to grapple with a most deadly enemy.

With the view of enabling commanders to obtain this information, the gentlemen previously named, after having devoted much close attention to the study of storms, have given to the world their ideas on this important subject; these ideas have been embodied in the shape of the instruments alluded to, by a use of which they apprehend the bearing of the centre of a gale may easily and readily be ascertained.

The first instruments introduced to the notice of seamen were Col. Reid's Storm Circles. Proceeding on the now well-known principle that the rotation of the wind in a hurricane is *always* contrary to the apparent course of the sun in the heavens, and, as a consequence, reversed in opposite hemispheres, the Colonel constructed *two* figures—one for the northern, the other for the southern hemisphere. These figures consist of numerous arrows arranged in circles, the four cardinal points of the compass having the word "needle" placed over them, the outer circle but one containing the hurricane winds, which of course are opposite in opposite hemispheres. The cards are three inches in diameter.

The principle of the construction of the cards, which is the same in all the instruments noticed, may be thus exhibited, the letters E and W in each arrangement being directed towards the north.

Northern Hemisphere.

		E		
	NE		SE	
N		C		S
	NW		SW	
		W		

Southern Hemisphere.

		W		
	SW		NW	
S		C		N
	SE		NE	
		E		

The letters in the above schemes represent the hurricane winds. It will be readily perceptible, that the wind blowing from the east on the northern side of a revolving gale in the northern hemisphere, the direction in which it revolves is contrary to that in which the hands of a watch move; in the southern hemisphere the reverse takes place, *i.e.* the motion accords with that of the hands of a watch.

Col. Reid has directed that three copies of his circles shall be appended to his work entitled "An Attempt to Develope the Law of Storms," that they should be cut out so as to form two circular figures, be dipped in turpentine to render them transparent, and placed on or moved along the chart according as the bearing of the centre or the changes of the wind are desired to be known. They are used in the following manner:—

When a commander has reason to believe he is in a rotating storm, the ship's place is to be found on the chart, and the transparent circle for the hemisphere he may be in placed on the chart, so that *the wind blowing at the time* shall be just over the ship's place, then the needle on the card being directed to the magnetic north the bearing of the centre is seen at a glance. Now if the commander knew the habitual path of hurricanes in the part of the world in which he may be sailing by moving the card along the track, keeping the needle on the card parallel to the magnetic meridian, he will see the changes of wind he is likely to experience.

As instruments of study, especially in becoming acquainted with the practical bearing of the law of storms, Col. Reid's cards are invaluable; in fact, we should be disposed to regard them as essentially useful in laying the groundwork of the knowledge afterwards to be applied in managing a vessel in a storm; but we sincerely pity the Captain who, having no further acquaintance with the important subject of storms than the manipulation of a storm card or hurricane circle, is overtaken before he is aware; and when a thousand different objects claim his attention, and he has no time for reflection, he has to spread out his chart, find the ship's place as near as may be, and determine his position from the hurricane circle; and we can well conceive his embarrasment, should he have ascertained the probable changes of the wind from moving the storm card over his chart, and afterwards experience different winds. The aphorism comes home in this case—"A little knowledge is a dangerous thing."

An able writer, a member of the merchant service, a gentleman who has successfully manœuvred with storms, has this pertinent paragraph on the study of storms:—

"In conclusion, I would recommend to the younger members of my profession, their not being satisfied with some simple rules given in works on storms. You should not require to turn your back to the wind to ascertain where the cyclone is. Col. Reid gives a little diagram to illustrate the striking and simple fact, that a ship will always sail into a cyclone on the same tack, on whatever part of the circle she may be on—and out of it on the opposite tack; but in this latter case, although a ship may be steering from the vortex, the storm, having recurved, may be coming up with her.* The general rules, tables of wind, and the storm cards are essentially highly useful in the study; and the storm card in particular should be so familiar that the direction of the wind instinctively indicates the centre. But it is to be remembered that the different diagrams illustrate the theory generally, and may require modifying under individual circumstances. A careful perusal of the works on storms the more the better; and after becoming well acquainted with the law of rotation in each hemisphere, *and the general progression in the different seas*, proceed to select examples, laying them down and measuring their progress without reference to the book; take the subject in all its bearings, including the winds, the clouds, and the run of the sea, the prevailing weather of the locality, what is seasonable and out of season. This only will give you that thorough knowledge which will enable you to apply correctly those minor traits which may be very significant. Our ships are now very superior—when we cannot dodge, enabling us to compete with

* In the case of a storm recurving in the southern hemisphere, the wind at first being east, the *port* tack heads the ship off from the centre. When the centre is on the same parallel with the ship, wind north, it has veered aft, and the same tack (the *port*) still heads her off from the centre. The centre of the storm by the recurving becomes south of her, wind west; her head in this case is directed north on the *port* tack, and she still draws from the centre. We offer these remarks to show that a vessel cannot sail from and to the vortex on the same tack in the same hemisphere.

the cyclone; and every young man is as much beholden to study the Law of Storms as Navigation."

To this paragraph we can add nothing recommendatory of the study of the Law of Storms; being the production of a Commander in the Mercantile Marine it must commend itself to every member of the profession.

With Mr. Piddington's "Horns" before us we proceed to notice that gentleman's contribution to this part of the science of Storms.

The "Horns" are very nearly similar to the cards of Col. Reid—in fact, the only difference consists in there being fewer circles. The cardinal points of the compass are designated "Compass North," "Compass South," and so on—the hurricane winds being placed outside the exterior circle. The horn is a more durable substance than paper. Mr. Piddington appears to have entered more into detail, relative to the use of the Horns, than Col. Reid. In his article on this subject he speaks of the variability of the storm tracks, and the changes in the veering of the wind in a hurricane as a consequence; this fact still more restricts the use of such instruments to the period of preparation—to the season for study. Mr. Piddington himself says, "I need I hope remind none that when bad weather is coming on, they will have other matters to attend to than studying *then* the application of the science; and that it is the cool and patient consideration of emergencies in fine weather, and at leisure, that makes the able and ready seaman when the crisis arrives."

The "Hurricane Circles" of Mr. Birt are constructed on precisely the same principles as Col. Reid's "Cards," and Mr. Piddington's "Horns." There is, however, an important difference between them. The "Hurricane Circles" are rings of stiff card-board, about three-tenths of an inch wide; the interior of the circle is graduated to the thirty-two points of the compass, and a circle of arrows indicates the whirl of the hurricane—the eight principal hurricane winds being designated by their appropriate letters. Letters of a different character are placed in an exterior circle; these letters, in use, are directed to the points of the compass on the chart.

We are somewhat disposed to consider that the latter instruments may be found quite as useful, especially in the *study* of the "Law of Storms," as those previously mentioned; the graduation enables the student to place the exact hurricane wind on the place of the ship, and if care be taken to direct the needle to the north, the bearing of the centre is shown instantly. As a means of meeting, in some degree, the difficulty arising from the variability of the storm paths in all parts of the world, Mr. Birt, in the little work, "The Hurricane Guide," to which the circles are attached, has given tables of the wind so arranged, that not only the veering, but the winds characterizing the commencement and termination of a cyclone at the ship, are clearly indicated. We extract the table having reference to the lower latitudes of the Northern Atlantic as a specimen.

LOWER LATITUDES.—NORTHERN HEMISPHERE.

Axis line, wind N.E., barometer falling, first half of storm.
Axis line, wind S.W., barometer rising, last half of storm.

RIGHT-HAND SEMICIRCLE.

Wind E.N.E., E., E.S.E., S.E., barometer falling, storm increasing.
Wind S.S.W., S., S.S.E., S.E., barometer rising, storm passing off.

LEFT-HAND SEMICRICLE.

Wind N.N.E., N., N.N.W., N.W., barometer falling, storm increasing.
Wind W.S.W., W., W.N.W., N.W., barometer rising, storm passing off.

A careful study of these winds in connexion with the hurricane circles must, we apprehend, go far to familiarize the actual storm phenomena when they become matters of experience.

The classes of instruments hitherto noticed are constructed of horn, paper, or card-board. Col. Lloyd's Storm-pointer is a sheet of glass on which is painted a spiral, representing the whirl of the storm; to this sheet of glass, an index or pointer is so attached that upon setting it to the wind at the ship, the bearing of the centre of the gale will be indicated. We are not aware that it has been extensively used on ship-board.

The storm compass of Commander Becher is a very neat and interesting application of the principles employed in the construction of the preceding instruments. It is, in fact, the mariner's compass, surrounded by the hurricane winds—a compass being constructed for each hemisphere. It is calculated to give the *clearest* idea of the rotation of the wind in a storm as referred to the points of the compass. As it is simply a storm compass, it is not used as Reid's, Piddington's, and Birt's cards, in connexion with a chart—the respective bearings of the ship and storm being given by inspection. There is, however, a considerable difference between the instruments: in using those previously noticed, the bearing of the centre of the storm from the vessel is determined: in consulting the storm compass, we are informed, that the compass-point within the arrow representing the hurricane wind, is the bearing of the ship from the focus or centre of the storm. In this way the apprehension of the most important point to be known is simplified. Does the wind blow from the east in the northern hemisphere?—Then you are north of the centre. Does it blow from the east in the southern hemisphere?—Then you are south of the centre. This is an important step as leading the mind to the apprehension of the whereabouts of a vessel without the trouble of consulting circles, cards, or charts. Let the hurricane winds be once thoroughly associated in the mind with the borders or radii of the storm on which they blow, and the bearing of the ship from the centre will be known instinctively, and conversely the bearing of the centre from the ship.

From our last remark it will be readily apparent, that after the student has made himself practically acquainted with the manipulation of the storm-cards and other instruments, and is able to box the storm compass, which is none other than boxing the ordinary compass at right angles, he is in a position to determine, from the mere blowing of the wind in a storm, the direction of the centre. He must, however, be careful that he does not get into confusion here. The boxing of Becher's compass gives him the border or radius of the storm he is on; and he must not confound this with the centre. A mistake of

this kind might be fatal. Nothing is more simple, *when clearly apprehended by the mind*, than the fact that THE CENTRE OF A REVOLVING STORM BEARS EIGHT POINTS FROM THE DIRECTION OF THE WIND AT THE SHIP, RECKONED WITH THE APPARENT COURSE OF THE SUN IN BOTH HEMISPHERES. When this fact is deeply impressed on the memory, all the above-mentioned intruments have done their work; so far as the bearing of the centre is concerned they may be entirely dispensed with.

One word with regard to the winds likely to be met with, and as indicated by moving the circles over a chart. The great point with the seaman is not so much to ascertain his probable winds, as from the actual winds he experiences to determine the direction in which the cyclone may be moving. As a matter of study, the circles will greatly assist in ascertaining the winds, or rather the succession of winds, dependent on certain paths described by cyclones; but when the winds themselves arise, when they blow furiously and call for the utmost amount of exertion a commander is capable of, to save his ship from the effects of their violence; he ought to have at his finger's ends—he ought, in fact, to know instinctively the course the hurricane is pursuing from the *hauling* of the wind *only*.

The charts of Captain Sedgwick are appended to a work, entitled "The true principle of the Law of Storms practically arranged for both Hemispheres." The object of the charts may be best explained in the Captain's own words:—" Fig. 1 is intended to represent the bearing of the vortex of a hurricane, in every wind from which danger to a ship may be apprehended in the southern hemisphere; so that those in charge of vessels, conversant with the scheme, will have no difficulty in applying it, as it supersedes the use of the hurricane card and the necessity for assuming a track; in short, it shows those, 'whose business is in the great waters,' the way to avoid danger whether the hurricane has recurved or not."

If this statement can be fully borne out, then the Captain has conferred on the mariner a boon above all price. With two charts, one for each hemisphere—the winds in the southern sweeping from S. to N.E., and those in the northern from N. to S.E.—the commander has before him full directions how to act with every one of the winds that may blow. According as it veers, he has simply to put the ship on a certain tack, or run before it, and the whole matter is attained; the thing is so simple that one is really surprised that so many voluminous works should have been written on storms, when the whole theory can be condensed into *two sheets*.

The principle on which Captain Sedgwick has constructed his charts is the veering of the wind, and this, apparently, without reference to the direction in which the hurricane may be moving. Has a captain a hurricane wind from E.S.E. in the southern hemisphere, and does it veer southward?—Put, says Captain Sedgwick, the ship before the wind, and run W.N.W.; but should it veer to eastward, then put the ship on the port tack. This is the general principle in both charts—no other directions but running off or bringing to, according as the veering may agree with the charts.

To us there appears to be a very important omission in these charts. Most commanders are fully acquainted with the possibility of falling in with a hurricane wind that does not *veer*, until the ship by being taken aback in the sudden shift at the centre has a narrow escape from foundering. How will Captain Sedgwick advise us to act in this case? If the ship be hove to it is only, perhaps, to meet the disaster earlier; and if she be put before the wind, it may be possible that her course will be inconveniently departed from. Can the charts, as they now stand, solve the difficulty in which a commander may find himself under such circumstances?

Passing by this omission, it may be well to inquire, if Captain Sedgwick's charts are available under every other circumstance. We extract another paragraph from the explanation which may, perhaps, answer the question. "It may be objected that a ship has motion as well as a hurricane, but a little reflection will easily tend to obviate such objection, when it is remembered that the drift of a ship is not greater than a knot and a half an hour, a mere trifle in comparison with the rate at which a hurricane travels; if the ship be running, then a *projection* may be used with advantage, and the two combined will give a certainty to the conclusion those in charge of ships may arrive at."

Then the charts alone are not sufficient to guide a mariner; if he be *running*, a projection *may be* used with advantage. In almost all cases a ship falling in with a hurricane will be running, and it very frequently happens that she is involved in its gyrations some hours before the captain is aware of it; under these circumstances, the *projection* must be more valuable than the *chart*, because it is a combination of the two that is to be the guide to give the certainty required. The construction of the projection, however, requires skill, and that not of an ordinary character. Where one of the elements—an important one—is uncertain, it is difficult to construct the projection so as to furnish a correct estimate of the path of the cyclone. We may lay off the course of the ship correctly, but to estimate the distance of the centre of a hurricane from the sail the ship is carrying is at all times a hazardous proceeding. In the remarks on the typhoon in the China Seas, *(Mer. Mar. Mag., p.* 53,*)* it is intimated that at 20 miles from the centre the ship was under single-reefed topsails. In Dr. Thom's diagram of the Rodriguez storm of 1843, ships at a distance of 200 miles from the centre were under single-reefed topsails. With such differences as these, how can we, at all, correctly estimate the distance from the centre by the force of the wind? We are rather inclined to discountenance the construction of projections from *imperfect* data, but would urge the mariner by other means, easily attainable, to ascertain the track of the cyclone.

It may not be unimportant to cite Captain Sedgwick's projections and confront them with his charts. According to the passage extracted, the two combined will establish a certainty as to the course desirable to adopt. In fig. 2, of the projections for the southern hemisphere, he takes a ship with the wind at E.S.E. The chart says if this wind veer southward, run W.N.W.; but if it veer eastward, put

the ship on the port tack. In the projection, he says, the centre of the hurricane bears N.N.E., and he sets it off from the ship's place 100 miles; he further says, it matters little whether we call the distance 100 or 200 miles, the result will be the same. The ship sails on a W.S.W. course 60 miles, and the wind veers to S.E.; the wind being supposed to be much stronger, the new distance of the centre is assumed to be 60 miles N.E. of the ship; a line drawn through the two positions of the centre, gives the probable course of the hurricane S.W. by S. nearly. What would the proceedings have been without the projection? The ship running on a W.S.W. course finds the the wind to veer to southward. The captain acts according to the direction, and runs W.N.W.; and by the time the centre of the gale occupies its second position, the wind veers to south. According to Capt. Sedgwick's projection, combined with the charts, (or on either the one or the other,) the ship must cross in front of the centre, a dangerous manœuvre at any time, and only to be recommended under very urgent and particular circumstances. Besides, the distance of the centre was estimated by Capt. Sedgwick at 100 miles. What if it had been less and the captain had found himself in the centre, after his run of 60 miles, the wind veering southward and Captain Sedgwick's directions having been followed? One supposition is as good as another; and when we come to hypothetical cases to illustrate a principle, great care should be taken that our suppositions accord with facts. What does Captain Sedgwick say of his own supposed case? "It will be perceived that the ship has run into a very dangerous position (by keeping her W.S.W. course), although she has got into the right-hand semicircle * * * * Now, to continue on this course, would be wrong; for, although you might escape the vortex, it would pass so near that the loss of a few spars seems inevitable; consequently, the ship's head should be put at right angles to the storm's course, namely, N.W. by W." A late proceeding this to rectify an absurd fatal error; first plunge into the neighbourhood of the vortex of a revolving storm, and then try to run away from it when the furious centre is close upon you, and you are not better off by scudding.

A competent knowledge of the law of storms would have told the captain that long before the 60 miles were run—the evidences of the approach of the centre would have been unmistakable. Already, on the port tack, nothing would have been easier than to have edged away a little to the southward; the wind would then have drawn east, and the ship would have gradually dropped into the S.E. quadrant, with a fair wind. For all homeward-bound vessels in the Indian Ocean, this quadrant is the most favourable, so long as the centre is kept at a safe distance. By manœuvering to keep the barometer well up, consistent with good sailing, the winds of this quadrant will bring a homeward-bound ship on her way: this is far more advantageous than scudding before the wind and getting into the right-hand semicircle, where, ten chances to one, you must sail round the northern border of the storm to get a fair wind. The principal object that a commander should be on the alert for, as he is bowling along with the winds of the S.E. quadrant, is the bend. Keep a sharp look out

for the bend, while sailing throughout the extent of the Indian Ocean, on the homeward passage. This may be known by the wind drawing N. and N.W.; and if care be not taken, under these circumstances, the N.E. verge may be overhauled very quickly, and a stiff and hard gale experienced from the N.W.—a little waiting, however, will allow the cyclone to get sufficient southing to admit of crossing its wake with safety.

Another word with regard to hypothetical cases. It is clear that with a ship's course W.S.W. and the hurricane's S.W. by S., an E.S.E. wind to be experienced, when the ship is *first* overtaken by the cyclone, the hurricane must be moving rather rapidly; but cyclones with such a progression are generally slow moving, and it is much more likely the hurricane would have taken the ship with a wind north of east. The wind, under such circumstances, would haul *against* the sun as if the ship were in *the right-hand semicircle*, and the direction of Captain Sedgwick to put the ship before the wind, would be fraught with danger; in fact, it would be very bad seamanship indeed, with an easterly wind and the course of the hurricane recurving, to run west and meet the centre. Look at the example in whatever way we will, it seems to have been conceived without a fundamental knowledge of the law of storms.

After this, we need not enlarge on the value of Captain Sedgwick's charts. We cannot say we have *selected* this projection for remark; it is the first we have examined—not lately, but nearly two years since. Satisfied that the charts, under certain circumstances, (supposed by the Captain himself,) are calculated to mislead, rather than guide the mariner, we have not taken the trouble to examine them further, as nothing can justify the recommendation of any directions to the Mercantile Marine by which a ship may be placed in danger. A false beacon, although for some time harmless, may one day lead the mariner astray; and that which, apparently, is intended for his benefit, may contribute to his destruction.

S.

THE MARINER'S COMPASS.

(*Continued from page* 64.)

THE DECLINATION (or Variation, as it is usually termed by seamen), is determined by the horizontal needle, and is the angular deviation of the compass from the true meridian. It was known to the Chinese at an early date, but whether they regarded it as a constant or a varying quantity does not appear; Keoutsoungchi writing in 1111 says that "the magnetic needle declines towards the east, and hence does not point straight to the south, but is only $\frac{5}{6}$ to the south." In Europe the phenomenon of an easterly declination of the north pole of the needle is mentioned by Peter Adsiger in 1269, and it could scarcely have escaped the attention of several of the early navigators; but the credit of the first significant observations on the subject is due to Columbus. On the first voyage of this great man to America, "he perceived," as

narrated by a graphic writer,* "about nightfall (13th Sept. 1492) that the needle, instead of pointing to the north star, varied half a point, or between 5° and 6° to the north-west, and still more on the following morning. Struck with this circumstance, he observed it attentively for three days, and found that the variation increased as he advanced. He at first made no mention of this phenomenon, knowing how ready his people were to take alarm; but it soon attracted the attention of the pilots, and filled them with consternation. It seemed as if the laws of nature were changing as they advanced, and that they were entering another world, subject to unknown influences. They apprehended that the compass was about to lose its mysterious virtues; and, without this guide, what was to become of them in a vast and trackless ocean? Columbus tasked his science and ingenuity for reasons with which to allay their terrors. He told them that the direction of the needle was not to the pole but to some fixed and invisible point. The variation was not caused by any failing in the compass, which, like the other heavenly bodies, had its changes and revolutions, and every day described a circle round the pole. The high opinion that the pilots entertained of Columbus as a profound astronomer gave weight to the theory, and their alarm subsided." The illustrious navigator (on this voyage) had ascertained the important fact that the declination varied in different latitudes, but his statements to this effect on his return were generally discredited, and it required the lapse of sixty years to prove their truth.

Records of occasional observations of the declination date from 1541 for the meridian of Paris, and from 1576 for that of London—at which periods it was easterly. Considerable uncertainty attaches to the precise value of these early observations, but it would appear, that at the commencement of the following century the amount of variation had decreased for the meridian of London, and that it continued to diminish until 1657-1662, when the declination was 0°, *i.e.*, the magnetic and geographical meridians were coincident. The westerly progression of the magnetic meridian was then continued until 1819, according to the observations of Colonel Beaufoy. "During the last nine months of 1818, the variation gradually increased and was in the morning 24° 37′ 4″, and at noon 24° 41′ 20″. It fluctuated during January, 1819, decreased in February, and again fluctuated in March. Since that time, the mean monthly variation has decreased continually: and Colonel Beaufoy, therefore, places the maximum of western variation (declination) about the month of March, 1819."†

This *secular* change in the declination of the magnetic needle will be more clearly seen from the following tables:—

For Paris:—

Years.........	1541	1580	1630	1666	1723	1804	1814	1849
Declination	8° E.	11½° E.	4½° E.	0	13° W.	22° W.	22½° W.	20° W.

For London:—

Years.........	1576	1622	1657	1672	1720	1765	1819	1852
Declination	11¼° E.	6¼° E.	0	2½° W.	13° W.	20° W.	24° 41′ W.	22° 18′ W.
Rate per year	7′	11′	12′	13′	9′	5′	0	4′

* Washington Irving.   † Quarterly Journal of Science, 1820.

It would seem, then, that the motion is not uniform, but becomes accelerated as the magnetic approaches the geographical meridian, and retarded as it advances towards its greatest deviation from it. It is, also, now well ascertained that over the greatest portion of the globe, the changes in the amount of declination in a given time is very marked, but there are a few localities as, for example, the Antilles and Spitzbergen, where, since the first discovery of those islands, the alteration has been very small.

The *isogonic* lines, (or lines of equal declination,) owing to the irregularity of the change of motion, are presented to us under a great variety of flexures, more or less complicated and tortuous. The American line of no variation (declination) is exceedingly regular, passing across Hudson's Bay, Lakes Huron and Erie, thence to the eastward of the Antilles, crossing the terrestrial equator in long. 48° W., and thence by Rio Janeiro and to the eastward of the Sandwich group in the South Atlantic. The Asiatic line of no variation is, on the other hand, extremely irregular, full of curves and loops which seem to be due to local interferences; passing through Australia, it bends westward across the Indian Ocean, turns towards the north along the western shores of Hindostan, is then deflected eastward towards China and Japan, when it stretches north, finally taking several irregular bends across Siberia and towards the White Sea.

Hansteen supposes that there are *four magnetic points of convergence*, two in each hemisphere, a stronger and a weaker one—that they are situate on opposite sides of the poles of revolution, the northern ones moving obliquely from west to east, and the southern ones also obliquely, but from east to west. The periods of revolution are as follows:—

The strongest north pole in 1740 years.
The weakest north pole in 860 years.
The strongest south pole in 4609 years.
The weakest south pole in 1304 years.

Hansteen further conceives that they have their origin from the action of the sun heating and illuminating the earth, and producing a magnetic tension in the same manner as it produces electrical and other kindred phenomena. The same writer, in speculating on the four periods above mentioned, states that they very closely approximate to the mystic number of the Indians, 432, when multiplied by 2, 3, 4, and 10. On these, in the mythology of the East, natural events depended. It is also worthy of remark that the sun's mean distance from the earth is 216 (the half of 432) radii of the sun; the moon's mean distance 216 radii of the moon: again 432 multiplied by 60 equals 25,920 the smallest number divisible at once by all the four periods of magnetic revolution, and the shortest time in which all the four poles can complete a cycle, returning to the same state as at present, and this *coincides exactly with the period in which the precession of the equinoxes will amount to a complete circle.*

In addition to the secular progressive movement in the declination of the needle, a regular *annual* change has been observed which seems to depend on the position of the sun in reference to the equinoctial and

solstitial points—thus, from the vernal equinox to the summer solstice, the needle moves towards the east, and during the following nine months it has a general motion towards the west. This discovery is due to Cassini in 1786, and was fully investigated by Arago.

There is also a *diurnal* change which was first made known by Graham in 1724, who noticed that in the morning the north point of the magnetic needle had a motion towards the west, retrograding in the evening in an easterly direction to its original position. From the later observations of Dr. Lloyd, the mean daily curve of the changes of declination exhibits a small easterly oscillation of the north end of the magnet, until half-past seven, A.M.; it then moves rapidly westward until half-past one, P.M., when it returns to the eastward with a slower motion, and during the night arrives at the point whence it started twenty-four hours previously. This daily oscillation is reversed in the southern hemisphere.

The INCLINATION or *dip* of the magnetic needle is a discovery due to Robert Norman, an optician of London, in 1576. A bar of unmagnetized steel, carefully suspended by its centre, will swing in a horizontal position, but if it be made magnetic, and allowed a free motion in the magnetic meridian, it will assume a certain angular position in respect to the horizon, the earth's polarity attracting the dissimilar pole. The dip has different values in different parts of the globe—being 0 at the magnetic equator, where it balances itself horizontally, and 90° at the magnetic pole where it takes a vertical position. The following Table shows the inclination of the needle in different latitudes :—

N. HEMISPHERE. Place.	Dip.	S. HEMISPHERE. Place.	Dip.
* Lat. 70° N., Long. 97° W....	90°	Peru	0°
Hudson's Bay	89° 57′	Lima	10° 30′
Petersburgh	71°	Cape of Good Hope	54°
London	68° 43′	Charlotte Sound	54° 50′
Paris	67°	Hobart Town	70° 40′
Rome	60°	Campbell Island	73° 53′
Alexandria	31° 12′	† Lat. 76° S., Long. 165° E...	88° 35′

The magnetic is not coincident with the terrestrial equator: the first is an irregular curve crossing the latter at several points and reaching its maximum deviation to the north and south in traversing the continents of Africa and America, while in the Pacific Ocean it recedes from the equator where the islands are numerous, and approaches it where they are more scattered, as if influenced by the configuration of the land and water.

Speaking of the dip of the needle, Capt. Walker says "it is of far more importance to navigation than has been imagined. It is actually a measure of the magnetic intensity of the needle, and an index to the inductive magnetic polarity of the iron within a ship, as well as everywhere else. The dip, then, not only ought to be known and recorded on our charts, but ships should be furnished with means for finding the dip in long voyages." And again, "in high latitudes, seamen

* By Sir James Ross. † Ditto.

find that the upper and under sides of articles made of iron greatly affect their compasses; it is because the dip is also great, and the earth's magnetism greater in high latitudes, than near the magnetic equator. But upon the magnetic equator itself, *the polarity of iron and its local attraction do not vanish;* the polarity of the iron only coincides with the earth's polarity, but the iron will still continue to act on the compass under a new form. If it were possible to sail round the world on a great circle passing over the magnetic poles, the dipping-needle would perform a complete revolution in a vertical plane, and the transient magnetic polarity of the iron in a ship would also perform a revolution along with the dipping-needle."

The *isoclinic* lines, (or lines of equal dip,) are nearly parallel to the magnetic equator, at least as far as magnetic latitude 60°.

The inclination of the needle, like the declination, is subject to secular and periodical changes, which are sometimes accelerated, and at other times retarded: at present, the annual decrease is about 4′: and, according to Hansteen, the dip during summer is 15′ greater than it is during the winter; and a slight hourly variation occurs, being about 4′ greater in the morning than in the afternoon.

The following table will show the alterations in the amount of dip:—

FOR LONDON:—

Years...1576	1676	1723	1790	1805	1821	1838	1852
Dip ...71° 50′	73° 30′	74° 42′	71° 53′	70° 25′	70° 4′	69° 17′	68° 43′

FOR PARIS:—

Years 1670	1750	1790	1819	1829	1835
Dip .... 75°	72° 15′	70° 52′	68° 40′	67° 58′	67° 13′

From the observations made in London it will be seen that from 1576 to 1723, when the magnetic dip attained a maximum, the mean annual rate was about 1¼′, and from 1723 to 1790 about 2¼′ each year, while at present it is decreasing at the rate of 4′ annually.

The INTENSITY of the earth's magnetism is determined by observing the number of oscillations made in a given time by the same (freely-suspended) needle in different parts of the globe, and is by far the most complicated of magnetic phenomena. Like the dip the intensity is greatest in the polar regions, and least near the equator, as the following table will show:—

Place.	Intensity.	Place.	Intensity.
W. of St. Helena......	0·743	Naples	1·274
Rio Janeiro	0·887	Paris.....................	1·348
Cape of Good Hope...	0·945	Berlin	1·350
Peru	1·000	London..................	1·369
Isle of France	1·096	Baffin's Bay	1.707

The intensity, however, is not a function of the dip, and the *isodynamic* (or lines of equal force) are not always parallel with the isoclinic lines. It would also appear that the magnetic intensity is smaller in the southern than in the northern hemisphere. Like the other elements of terrestrial magnetism it is subject to monthly and daily changes. The greatest monthly change occurs when the earth is in its perihelion and aphelion—in December and June—when it is a maximum; at the time of the equinoxes a minimum takes place.

With regard to the daily variation of intensity, it is least in winter and greatest in summer—it is, however. a minimum when the sun is near the meridian, increasing towards the evening, after which it begins to decrease.

(To be continued.)

CONTRIBUTIONS TO THE HISTORY OF THE LAW OF STORMS.

Typhoon in the China Sea, November, 1853.

On the 17th of November, 1853, the barque, *Bangalore*, Captain W. Morgan, experienced a severe typhoon in the China Sea, Lat. 14° 30′ N., Long. 110° E. We give below the leading particulars of the typhoon, and take occasion to remark that it affords a most instructive instance of the error of sailing across these dangerous visitants of this part of the ocean. We gather, from the information that has come to hand, that the course of the ship was S. by W.; that the typhoon was moving towards the west, and that the vessel sailed on such a course with regard to that of the typhoon, that until she had just reached the centre, the wind continued blowing from the N.E., but very rapidly increasing in force, presenting precisely the same phenomena in these particulars—as if the ship had been meeting the typhoon on the axis line. This, however, could not have been the case with such a course and such a wind. *To have sailed on the axis line towards the centre the ship's course must have been S.E.* The instance of the *Bangalore* is, consequently, one of shooting across the front of an advancing and progressing whirlwind *with such a velocity as to come up with the centre*, and we find the ship met with a great portion of the disastrous consequences that must ever attend such a proceeding.

On refering to the remarks on the Typhoon in the China Sea, May, 1853, *(Mer. Mar. Mag., page* 53), it will be seen that the cyclone forming the subject of that article consisted of two portions, a *non-effective*, characterised by winds of less strength than a double-reefed topsail gale, and an *effective*, or, perhaps it may be more accurately described, a *destructive* portion within which the wind raged with uncontroulable fury. The winds are spoken of as having been terrifically and fearfully violent, We have no means of ascertaining the *actual* extent of the destructive portion of the *Bangalore's* typhoon, but from the captain's statement that he had the heaviest of the typhoon about *nine* hours—of course, including the periods preceding and succeeding the passage near the centre—and from his recording, at 10 P.M. on the previous evening, the earliest squally weather, with the necessity for taking in all small sails and studding sails fourteen hours before the ship reached the centre, it would appear that the relative diameter of the effective portion was a little less than one-third of the diameter of the entire cyclone.

It will be seen, on comparing the two typhoons, that a very similar relation existed as to the *outer* and *inner* winds of the respective cyclones; and it is to this arrangement that we desire particularly to solicit the attention of commanders. Most captains appear, so far as we have been able to learn, to have been more or less deceived by the strength of the outer portion being described as a common close-reefed topsail gale; so that in these terrible visitants of the China Sea, a double-reefed topsail gale excites no alarm. With the wind hanging at one point, increasing in force, first the studding sails, then the royals and top-gallants being taken in, the ship pursues her course as under ordinary circumstances, till at length it is found necessary to take in a reef or two, and the next thing we hear of is the terrific increase in the force of the wind, and as, in the instance under consideration, two hours after she double-reefed her topsails, the ship was scudding under two reefs in her foretopsail and foresail, the wind blowing in terrific squalls with *every appearance of a typhoon.** An hour afterwards she broached to, and at the shift lost her foretopmast, foremast-head, main-topmast, top-gallantmast, with all the yards and sails attached to them; besides all this loss and damage, she was on her beam ends, the sea making a clean breach over her, and the wreck lying on her lee side, doing a great deal of further damage. Surely, in this locality, too much attention cannot be given to the typhoon winds preceding a double-reefed topsail gale, if after being reduced to close-reefed topsails a vessel experiences so much difficulty in escaping from the terrific wind and sea that almost immediately succeeds.

There is great reason to believe that nearly all the typhoons met with in the China Sea are similarly constituted to those noticed in our columns, and that by a proper attention to the preliminary winds, much damage may be prevented and very little time lost. It should never be forgotten by commanders navigating this or any other part of the ocean, that a hanging wind, *i.e.* a wind blowing in a hurricane or typhoon from *one* point, while at the same time, it is increasing in force, will invariably lead to the centre. Whatever then may be the relative directions of the course of the ship and that of the typhoon, *it is most important the commander should steer from the centre.* By adhering to the plan adopted by Captain Methven, of chalking down the course of the ship when the proximity of a hurricane is apprehended, it is likely all the necessary information may be obtained long before the crisis arrives: thus, in the instance before us, if the ship's course had been laid down during the first half dozen hours, it would have been ascertained that the centre was not bearing down on the ship, but that the ship was approaching the axis line on a S. by W. course at a very considerable angle, the commander then could have turned his ship's head S.E., which would have soon brought the wind to E.; in fact, had he steered a S.E. course, when he took in

* We would remark that long before the ship reefed her topsails and she experienced the terrific squalls, there were evident indications of the presence of a cyclone—the previous squally character of the winds appear to have been very significant, as well as the fall of the barometer.

his mainsail, he would have had an easterly wind when reduced to double-reefed topsails. This would have informed him that the ship and typhoon were on the same meridian, and his ship's course, as laid down, with the persistency of the N.E. wind on the S. by W. course, and the veering of the wind to E. on the S.E. course, would have announced to him that by a little further pushing on in the same direction, or waiting when on the meridian of the gale, he could have resumed his course with safety. We apprehend that no condition can arise, especially in the China Sea, the commander having plenty of sea room, in which he is unable successfully to manœuvre with his enemy: the usual size of the cyclones, hereabouts, is such that, under ordinary circumstances, he can easily dodge, sailing round the heel or front, waiting on the typhoon, or altering his course, as he may find it expedient: the larger area of the lighter and non-effective winds giving him plenty of time to ascertain his position and to take his measures for avoiding the furious vortex within the circle of a double-reefed topsail gale. We would impress on commanders the importance of studying the phenomena of storms in every part of the world; and to those who have much business in the China Seas, we would say, by all means make yourselves thoroughly acquainted with the paths, *size*, direction of motion, intensity of force, and other phenomena of the resistless typhoon.

Particulars of a Typhoon in the China Sea, as detailed in a Letter from Capt. MORGAN *to the Agent for Lloyd's at Singapore*:—

Nov. 17th, 1853. Lat. 14° 30′ N. Long. 110° E.

		Bar.
10 p.m.	Squally. In all small sails and studding sails...	30·00
Mid.	Heavy squalls; in topgallant sails	29·80
4 a.m.	Increasing breeze, with heavy squalls and rain; in mainsail	29·50
8 a.m.	Increasing breeze; double-reefed the topsails ...	29·00
10 a.m.	Terrific squalls; handed the mainsail and maintopsail, and secured the maintrysail and mizen. Every appearance of a typhoon; ship scudding under two reefs in the foretopsail and foresail, steering S. by W.	
11 a.m.	Ship broached to, blowing most terrific; handed the foresail; foresail split to pieces; near the centre of the typhoon	28·00
11.30 a.m.	Wind shifted from N.E. to N.N.E., blowing fearfully hard, with a heavy sea	
Noon.	Wind shifted suddenly into the N.W. The foretopmast went, carrying away the foremosthead, maintopmast, topgallantmast, and all the yards and sails attached to them, the jibboom, flying jibboom, and sprung the bowsprit at the same time. We considered ourselves to be in the centre of the typhoon.......	

O.

AUSTRALIAN VOYAGES.

[*To the Editor of the Mercantile Marine Magazine.*]

SIR,—As the question is now agitated whether the passage to Australia and New Zealand should be made by the composite track, or by the course formerly in practice of steering east on the parallel of Bass's Straits, allow me to make a few remarks on the manner in which a comparison should be made.

Mr. Towson brings forward the cases of the *Statesman*, the *Eagle*, the *Marco Polo*, and other fast ships, (commanded by first-rate men,) and their rapid passages, in proof of the superiority of the composite track. Others again aver that the greater strength of the westerly winds, in lat. 43° to 46° south, saves more than the decrease of distance by the composite track further south; and a few will have it that with the steadier weather and smoother sea in lat. 39° S. the greatest progress is made.

In a former number, a writer expresses fears that there will be difficulty in getting shipmasters, generally, to keep the log so correctly as to determine currents from their dead reckoning and observations. I would say still further that log-books of Australian-bound ships will only lead to doubt and confusion, as to the best parallel for winds, until a tendency to exaggeration is put down. With the view of having a just comparison I would propose the meridians of the Cape of Good Hope and Port Phillip for ships bound through Bass's Straits, and the meridians of the Cape, and 146° E. for those bound round Van Diemen's Land, as the limits of a table to contain the comparative runs, taking into account the sailing qualities of the different vessels, in a concise manner, along with the following data, thus :—

Name of Vessel.	Year.	Month.	Mean Lat.	Extreme South Lat.	Extreme Speed per hour, knots	Mean Spd. made per hour.	No. of days between limits.
Elora	1845	October	40° S.	41° S.	9·5	8	31
Ditto	1847	January	43° S.	44° S.	10	7·6	32½
Ditto	1848	April and May	43° S.	44° S.	10	7·75	31½
Simlah.........	1853	May	44° S.	45° S.	10	8·25	29
John Fielding	1853	Ditto	44° S.	46° S.	11·5	8·7	27
Marco Polo...	1853	Ditto	Comp.	55° S.	17	9	24½

I commanded the *Elora* and *Simlah*, and give the only four voyages I ever made to the Colonies. In 1845 I beat two vessels that sailed faster and were lighter than the *Elora*, nine days from the meridian of the Cape to Sydney. These vessels proceeded to 48° S., and fell in with N.E. winds, and I did not hear anything more about great circle sailing until at Wellington, New Zealand. In 1848 I fell in with the *John Wickliffe*, Capt. Daly, from Otago, where he had

been some time landing pioneer settlers. The *John Wickliffe* ran from the meridian of the Cape to Otago in thirty-five days, by the composite track, extreme southing $52\frac{1}{2}°$. This was in February and March, or the southern autumn, in all likelihood the proper time for the composite track, and her extreme speed did not exceed eleven knots. This experienced shipmaster, though not so early as the unfortunates to Sydney, preceded, by some time, the shipmasters mentioned by Mr. Towson, in adopting the composite track; and if this is not generally known it is not that Capt. Daly felt unwilling to contribute to scientific navigation, but knowing that great circle sailing was formerly published in our navigation books, naturally thought it known to well-informed navigators, and was incapable of seizing the heroic trumpet, and spouting his track as an application of his exclusive science.

The cases of the *Marco Polo* and *John Fielding* afford a puzzling comparison, as off Tristan d'Acunha the *John Fielding* was passed by the *Marco Polo* gaining on the *Fielding* at the rate of one mile in five. The *Marco Polo* proceeded to 55° S., or at all events Capt. Forbes hailed Capt. Clarke to do so, and arrived at Port Phillip three days before the *John Fielding* passed on her way to Moreton Bay, never exceeding 46° S. The *Fielding* ran over nearly $\frac{1}{10}$ more distance, thus making their respective ratios as 4 to $5\frac{1}{2}$, whereas their times stood $27\frac{1}{2}$ to 27. When on a wind the ratio must have differed still more, as the *Fielding* is a regular square-bowed bruiser. The only reason I can think of, why the *Fielding* was beaten only two days and a half is, that, to the eastward of Tristan d'Acunha, the wind hauled to S.E. for two or three days, when the *Fielding* stood E.N.E., confident to make a good southing and easting when the wind, in accordance with the general rule, should shift to N.E., which happened when the *Fielding* tacked, and set studding sails, running to the S.E. free. But the *Marco Polo*, taking the "form of the globe as a guide," stood south-westerly, confident that if he lost by the manuœvre, seventeen knots per hour would soon make up for the loss. I give this case in detail, to shew the difficulty of an inductive comparison founded on doubtful data. Any one entrusted with the task of founding a theory on clipper's logs will see the effect the column headed "extreme speed" would have in shewing whether the wind, as marked in the log, agreed with the average accomplished speed.

As a more accurate way of marking the strength of the wind, let a square foot of tin, or any light stiff substance, be made to act on a spring balance, such as is commonly used for weighing meat, &c. Then in a clipper running seventeen knots per hour, say right, or nearly right before a stiff gale of thirty miles per hour—the strain, while the ship maintains the impulse once given her, will, according to Smeaton's Table, be only fourteen ounces per square foot, the plate being suspended by twine in a way to act fair, as the wind is only following up thirteen miles per hour. But a deep clumsy barque, then wallowing along ten knots per hour, having the wind on her at twenty miles, will, by the rule of squaring the velocity of the wind for the ratio of the pressure, feel a strain of two lbs. per square foot, requiring a proportionate reduction of canvass, and a more stormy

tone in the log book, kept by the mate of the vessel of more humble pretensions. Even in this case I make no allowance for the vibrating arc of the lofty sails, sure to be most straining in the shortest, that is, slowest vessel—and if any one says that clippers never go seventeen, I may say eight is the more common extreme rate of our ancient barques—"fair fa' their honest sonsy faces." Some officers of clippers boast of their carrying sail with a free wind, but an officer of the *Sovereign of the Seas* briefly disposed of the fact by telling me he was, when in that vessel, struck by a heavy squall off Cape Horn, but as they ran away from the squall, at the rate of twenty-five miles per hour, they scarcely felt it.

By the method of tabulating I here propose, we may hope for the true rates of sailing of clipper ships—of the greatest importance in framing a scientific theory—as they seem almost the only ones that can afford to lose time for the benefit of science, seventeen and twenty-five knots per hour soon making up for any delays incurred. If we cannot get the truth, we may say with the doughty Lancashire divine, who failed in expelling the light-footed demon from Richard Dugdale—"Why don't you go faster?" "Why don't you go faster?"

I remain, Sir,

A London Shipmaster.

THE ABSTRACT LOG.

(As arranged by the Members of the Maritime Conference.)

Enter the class of the vessel, her name, country, and name of captain.

State if the vessel is of iron or wood: mention the quantity of iron, if any, in the cargo.

Enter the names of places at which the vessel has called during the voyage.

State the meridian from which the longitude is calculated.

Enter the corrections to the barometer: viz., index error—capacity—capillarity—mean height above the sea—S. G. error—state by whom compared, and to what standard.

Enter the correction to the thermometer.

Insert the table of local deviation on each point of the compass at the commencement and end of the voyage. State how the deviation was determined, whether the vessel was loaded with iron prior to the observations being made, or whether any iron as cargo was taken on board subsequently.

Enter the force of the wind by the following numbers, (sailing by the wind):—

0. Calm.
1. Ship has steerage.
2. Clean full one to two knots.
3. Id. three to four knots.
4. Id. five to six knots.
5. With royals.
6. Topgallants over single reefs.
7. Double reefed topsails.
8. Triple id.
9. Close reefed topsails and courses.
10. Close reefed main topsail and reefed foresail.
11. Stay sails.

Enter the forms of clouds — Cirrus (*Ci.*); cumulus (*Cu.*): stratus (*St.*); nimbus (*Ni.*), &c.

ABSTRACT LOG OF . CAPT. .

FROM to 18 .

Date.	Hour.	Latitude by Observation.	Latitude by D. R.	Longitude by Observation.	Longitude by D. R.	Currents. Direction.	Currents. Rate.	Magnetic Variation observed.	Winds. Direction.	Winds. Force.	Barometer. Height.	Barometer. Thermometer.	Thermometer. Dry Bulb.	Thermometer. Wet Bulb.	Forms and Direction of Clouds.	Proportion of Sky clear.	Hours of Fog A, Rain B, Snow C, Hail D	State of the Sea.	Water. Temperature at Surface.	Water. Specific Gravity.	Water. Temperature at Depths.	State of the Weather.	Remarks.
I. 31	2																						
	4																						
	6																						
	8																						
	9																						
	10																						
Noon	12																						
	2																						
	3																						
	4																						
	6																						
	8																						
	10																						
Mid.	12																						
II. 1																							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Explanatory Notes for Keeping the Abstract Log.

The name of the *last* place from which the vessel sailed, and the place to which she is going should be stated in the abstract.

1st *Column.*—The time inserted in the Abstract Log should be civil time, but if astronomical time is inserted, it should be so stated at the commencement of the log. The months should be indicated by the Roman letters from I to XII, January being I.

2d *Column.*—Hours. This column contains all the hours at the even numbers, and in addition, 9 A.M. and 3 P.M. The hours 4 A.M. and 9 A.M., noon, 3 P.M. and 8 P.M., are printed in larger type, to indicate that it is at these hours that observations are principally required, as will be further explained.

3d *Column.* Latitude observed.
4th *Column.* Latitude by dead reckoning.
5th *Column.* Longitude observed.
6th *Column.* Longitude by dead reckoning.

The latitude and longitude should be observed frequently at sea, and more especially about 4 A.M., noon, and 8 P.M., and the result referred by the log to the hour nearest to which the observations were made, in order that the ship's position may be as accurately determined as possible at those times. This should be particularly attended to, when the ship is expected to cross or enter upon any of the great streams and currents of the ocean, the trade or periodical winds. The position by dead reckoning should be deduced from the last observation for latitude and longitude. If the longitude is determined by lunar distances, note it in the column with its proper sign ☉☾, ✱ ☾, and if by chronometer ☉ or ✱. When in sight of land, and the ship's position is determined by bearings, it is still desirable that the position of the ship should be given in latitude and longitude, in the proper column.

7th and 8th *Columns.*—Direction and rate of Currents. On ordinary occasions the currents should be determined at noon on each day, by comparing the position of the ship, as determined by observation, and its position, as found by dead reckoning; the direction and rate of the current in nautical miles for the last twenty-four hours should be given; besides the daily entry at noon, the rate and direction of currents should be noted at shorter intervals, when the ship is in the vicinity of the great oceanic currents, or when it is supposed that the currents may sensibly vary in the twenty-four hours.

9th *Column.*—The observed variation should be entered in degrees and minutes, and when the variation is determined by observation of the moon or a star, the sign ☾ or ✱ should be placed after the entry, thus: 23°, 16′ W. ☾.

The variation should be correeted for local attraction, in other words, the variation entered should be what the variation would have been, had the ship been heading at the time of observation upon the course, in which the local variation would be 0.

It is desirable that every vessel should be provided with a *standard compass*, with which all the observations for variation should be made. The position of the standard compass, or of the one used, should be that in which the local attraction is the least, and the compass should always be placed in the same place. When the variation has not been observed, the variation *used* should be corrected for local attraction, and noted.

10th *Column.* DIRECTION, 11th *Column.* FORCE, of the WIND.—The direction and force of the wind should be regularly entered at 4 A.M., noon, and 8 P.M. The force and direction entered should be that which has been most prevalent during the eight preceding hours. The direction should be by compass, and expressed in points, The force of the wind should be indicated by the figures given in the first page; if there are squalls, their force should be given in a parenthesis, opposite the hour at which it takes place.

12th and 13th *Columns.*—THE BAROMETER AND THERMOMETER should be observed, if possible, at all the hours given in column 2, and at least at 4 and 9 A.M., noon, 3 and 8 P.M.

14th and 15th *Columns.*—THE DRY AND WET BULB THERMOMETERS should be observed at the same hours as the barometer. If it rains at the time when the observation with the wet bulb is taken, put the letter B. after the temperature. Before reading the wet bulb thermometer, the bulb should be moistened with fresh water, and allowed to remain a few minutes in the open air, in the shade, and where strong currents of wind from the sails cannot affect it.

All the thermometers ought to have two scales, one that of the country to which the ship belongs, the other the centigrade.

16th *Column.*—THE FORM AND DIRECTION OF THE CLOUDS should be noted at least at 4 A.M., noon, and 8 P.M., and as they appear at the time of observation. The form of the clouds should be indicated by the letters given in the first page. When the clouds are observed to be going in different directions at the same time, the direction of the upper ones should be stated above that of the lower, and separated by a bar, thus: $\frac{\text{N. N. E. Ci}}{\text{S. W. Cu.}}$

17th *Column.*—THE PROPORTION OF THE SKY CLEAR should be indicated by figures from 0 to 10. Thus 8 indicates that $\frac{8}{10}$ of the sky is clear.

18*th Column.*—FOG, RAIN, SNOW, AND HAIL. The number of hours of fog, rain, snow, and hail, in the eight preceding hours, should be noted at 4 A.M., noon, and 8 P.M.

The letter A indicates fog; C snow.
B rain; D hail.

One or two bars placed under the hours indicate degree: thus, 3 B is three hours of light rain; 3 $\underline{B}$, rain; 3 $\underline{\underline{B}}$, heavy rain.

The direction and force of the wind, &c., before, during and after the rain, should be stated in the column of remarks.

19th *Column*.—THE STATE OF THE SEA, during the eight preceding hours, should be stated at 4 A.M., noon, and 8 P.M., by means of the signs given in the second page.

20th *Column*.—TEMPERATURE OF THE WATER AT THE SURFACE. For the hours at which the observations should be taken, see directions for the barometer and thermometer. The water should be taken up in a wooden bucket, as far as possible from the ship's side, and placed in the shade on deck; the thermometer should then be placed in the water, and left there for two or three minutes, and read afterwards, whilst the bulb is in the water. In addition to the ordinary observations, the temperature of the water should be taken when any particular circumstances may seem to make it desirable, as when there are changes in the colour of the water, in the neighbourhood of ice, shoals, the Gulf or other streams, and at the mouths of great rivers.

The temperature of the water should also be taken during thunder storms, and when any electrical phenomena are observed.

21st *Column*.—THE SPECIFIC GRAVITY OF THE WATER AT THE SURFACE OR AT DIFFERENT DEPTHS should be noted at least once a day; when the water is taken from a certain depth, the depth should be entered under the specific gravity and under a line ($\frac{988}{100}$). The specific gravity is stated without any other correction than that which the instrument employed may require. The temperature of the water should be placed in the 20th and 22nd column. It is desirable that a uniform scale should be adopted in the instruments used in ascertaining the specific gravity; that the specific gravity of distilled water should be the unit, and that of the sea water expressed in decimals.

22d *Column*.—THE TEMPERATURE OF THE WATER AT DIFFERENT DEPTHS should be taken at least once a day, according as circumstances may be more or less favourable; the temperature should be entered above the specific gravity, and separated from it by a bar ($\frac{54^\circ}{100}$); the unit of measure in depths is stated at page 2. In taking water from moderate depths, it may be hauled up in a cylindrical box, eighteen inches long and six inches in diameter, having two valves in the ends opening upwards. This box may be either of wood or iron, and attached to the deep sea lead.

It is desirable frequently to try the temperature of the water at the depth of the ship's cock below the surface; the cock should be left open for eight or ten minutes before the bucket is filled, and the thermometer should be left two or three minutes in the water as before described, before reading it, and it may be well to note the rate of the ship at the time the cock was open. The temperature of the water at the surface should be observed, whenever the temperature at different depths is taken.

When there is a great difference between the temperature of the water at the surface, and at some depth, observe the indications of the wet and dry bulb thermometers, and note them in the column of REMARKS.

Although these observations are of importance in every part of the globe, still there are certain regions where the differences between the temperature at the surface, and the temperature at certain depths have a particular interest. We may mention the regions of the trade-winds, the Indian Ocean, the Cape of Good Hope, and especially in the Lagullas Current, and near the mouths of great rivers.

Column OF REMARKS.—The column of remarks will contain everything which the captain may consider useful. We direct attention to the following points:

1st.—If the vessel is a steamer, state whether she was steaming or under sail at the time the observations are made.

Tempests, Tornadoes, Whirlwinds, Typhoons, or Hurricanes, &c.—Every circumstance connected with these should be stated in great detail, the different changes of the wind, the appearance of the sky and the clouds, of the sea and electrical phenomena, rain, hail, &c. The height of the barometer should be frequently noted, at least as often as there is a change of a tenth of an inch, and the time when the remarks are inserted should be stated.

When *waterspouts* are observed, the time of their duration, their successive appearances, their formation, gyratory movement, translation, and breaking up, should be described.

Note the circumstances attending storms, the thunder, lightning, &c., and when phenomena of this nature are observed by navigators, they should be guided in their observations by a reference to analogous phenomena which they may have observed in other regions, more especially upon the edge of the Gulf-stream.

It is desirable to have the *temperature of the rain* compared with the temperature of the *air*.

When it *hails*, describe the *hail-stones*, and electrical phenomena.

Note the quantity of *dew*, the time when it commences to fall, and in cases of extraordinary deposits, note the temperature of the air as close to the surface of the sea as possible, and at the same time at the mast-head.

When *red fogs* or *showers of dust* are met with, describe the weather and the appearance of the sky, and obtain, if possible, specimens of the dust.

Observe the height of the waves, the distance between them and their rate of progress; the means of doing this are described in the second page.

Note the *tide-rips* seen, particularly in the tropics, and the age of the moon at the time.

When the surface of the sea is covered with *pink or white patches* of water, as is often the case in the Pacific Ocean, describe them, and preserve specimens of the water in phials with ground glass stoppers; if practicable, get a cast of the deep sea lead, and take the temperature of the water at the surface, and at some depth.

When *deep sea soundings* are taken, state the time the lead takes to descend each 100 fathoms, and carefully preserve whatever the lead brings up from the bottom.

It is much to be desired, for the sake of comparison, that the same sized line and the same shaped lead of equal weight should be used.

In places where *ice* may be met with, observe the temperature of the water frequently; these observations are most valuable when there are fogs which may prevent the ice from being seen, as they may indicate its presence even at the distance of two or three miles, especially when the ice is to leeward.

Note the appearance of the ice, and the direction in which it has been drifted.

In addition to the *thermometers* usually supplied to ships, it is desirable that they should be furnished with others *with white, black, and blue bulbs*, colored with water colors. These three thermometers should be exposed simultaneously to the sun in fine weather for some minutes at 9 A.M., noon, and 3 P.M., and occasionally at night in time of dew; their indication should be entered in the column of remarks.

Note the *shooting stars;* their point of departure, and the point to which they appear to converge, the constellations which they traverse, their numbers in a given time. They should be especially observed about the 10th of August and the middle of November.

The *Aurora Borealis*, the time of its appearance and disappearance, extent, form, position, intensity of light, color; its motions and changes should be described.

Halos, rainbows, meteors, &c. should also be noted,

Carefully note the appearance of *birds, insects, fish, sea-weed, drift wood*, and mention any circumstances which may throw light upon their appearance.

When at anchor, *tidal observations* should not be neglected, and the times of high and low water, if possible, should be observed; state the time also of change of tide, the rate and direction of the current at various stages, both on the flow and ebb, and everything relative to this important question. Hourly meteorological observations, especially at the times of the equinoxes and solstices, would be very valuable.

In addition to the observations mentioned in the abstract log, it is desirable that each captain should write at the end any general remarks which his personal experience may suggest, more especially if he has frequently made the same voyage.

N.B. In the foregoing instructions, the reference to page 2 relates to that portion of the Log in which will be given a short "Description of the Instruments, the manner of using them, and of making the observations."

[In laying before our readers the "Abstract Log," as recommended by the members of the Brussels Maritime Conference, with a view to the advancement of Meteorological Science, especially in its application to Navigation, it is necessary to state that Captains of merchant vessels

will not be required to fill up all the columns in order to be entitled to the privileges of co-operators in the system of research. The Report states that the minimum of the requirements in their case will be, that the position of the vessel and the set of the current, the height of the barometer, the temperature of the air and water are determined at least once a day, the force and direction of the wind three times a day, and the observed variation of the needle occasionally; the remaining columns are intended for the navy: it, however, remains with the merchant service to do its utmost, and we cannot doubt but that many of our principal Captains will gladly avail themselves of every opportunity to contribute, as largely as possible, to the great cause of science.

The various governments, represented at the Conference, are now actively engaged in procuring all the necessary instruments for the grand undertaking. Extensive orders have been received from the American Government, by Messrs. Negretti & Co. and other London makers, for Thermometers of superior construction.

Many of the continental shipmasters and owners are also giving attention to the subject, and are inquiring, in this country, for Barometers, Thermometers, Hygrometers, and Saliometers of first-rate quality and construction, and which will bear comparison with the required standards. We should, therefore, recommend Instrument Makers to give their best energies to the manufacture of such articles as will at once do themselves credit, and furnish trustworthy records, as the demand will be proportionate to the excellence of the instrument.]

HONORARY REWARD.

Her Majesty's government have awarded to Miguel Riera, captain of the Spanish brig *Veloz Gaditano*, the sum of £18, in reimbursement of the expense of maintaining the crew of the brigantine *Eagle*, for forty-three days, together with a silver medal and a gratuity of £10 for himself, and a gratuity of £10 for his crew, as a reward for their exertions in saving the crew of the *Eagle*, and for their kindness to them while they remained on board the Spanish vessel.

CERTIFICATE CANCELLED.

A naval court was instituted under the provisions of the Act 13th and 14th Victoria, on board Her Majesty's ship Naiad, at Callao, on the 26th January last, to investigate a charge of drunkenness and misconduct preferred against Mr. Albert Grimmenga, late master of the British ship England's Queen, and that court having superseded him, the Board of Trade have, upon consideration of the report and evidence, determined that his certificate of competency shall be cancelled.

LEGAL DECISIONS.

Admiralty Court.—*April 27.—The Unition v. the Blenheim.—Collision.—Circumstances in which Crews are justified in abandoning Vessels.*—This was an action brought by the brig *Unition* against the brig *Blenheim*, to recover the loss resulting from a collision between them about 11 P.M. on the 15th of December, 1852, off Flamborough Head. The *Unition*, (157 tons) coal laden, was proceeding from Newcastle to Jersey, close hauled, as she represented, on the starboard tack. On descrying the *Blenheim*, (222 tons) bound in ballast from London to Middlesborough, she kept her course, according to the rules of navigation, but the *Blenheim* not giving way, as she was bound to do, and collision becoming inevitable, she ported her helm, with a view of diminishing the effect of the blow. On the part of the *Blenheim* it was alleged that at the period in question she was reefing her sails and lying almost dead on the water; that it was therefore the duty of the *Unition* to port her helm as soon as she saw the *Blenheim*, but she neglected to do it until it was too late to avoid the collision. The *Unition*, after the accident, was abandoned by her crew, but was subsequently salved and conducted to Great Grimsby, where £400 were paid for the service.

Dr. Lushington, addressing the Elder Brethren, said: Gentlemen, there has been one question which has been agitated on the present occasion to which I do not intend to call your attention, I mean the question, whether the *Unition* was properly abandoned on behalf of her master and crew after the collision, or whether they precipitately left her? This is not a matter on which I feel authorised in asking your opinion. It does not depend on nice nautical points, but on considerations which those sitting in this chair are supposed capable of giving to it. However glad I should be of your assistance, I must adhere to the law, and not improperly put questions to you. There are, however, two questions which I must request you to consider, the first of which relates to the conduct of the *Unition*, and the second to the conduct of the *Blenheim*. It appears the *Unition*, a vessel of 150 tons, was bound (laden with coals) to Jersey. The collision took place on the 15th of December, a few miles from Flamborough Head; and the weather at that time, as appears from all the evidence, was not perhaps to be called tempestuous, but was of a threatening character. I make that observation because it is not only stated in the evidence on behalf of the *Unition*, but by that on the part of the *Blenheim*, that the wind was W. by N., blowing heavily; that, at this time, in consequence of the violence of the wind, so and so was done. It was evident, therefore, that the weather was rather to be considered as threatening. It appears that the wind having blown S. for some time before, the master of the *Unition*, instead of keeping his proper course to Jersey, thought it right to seek shelter by keeping close to land. This appears to me to dispose of a question much discussed at the bar, namely, whether the *Unition* was, at the time she met the other vessel, close hauled. I think if the wind was W. by N., and the proper course to Jersey was S. by E. she was not close hauled. If on the other hand she was keeping as close as she could to the shore, she was close hauled for the purpose of going to the Humber. Therefore the only question that can arise is, whether, looking at the state of the weather, and the season of the year, the vessel was justified in abandoning her direct course and seeking the land. Another question much discussed was the quarter from which the wind blew. So far as I can form an opinion, it was varying from W.S.W. to W. by N., but upon the precise quarter from which the wind blew at the moment of the collision the evidence does not enable me to form an opinion. Under these circumstances, the *Unition*; according to her statement, first saw the *Blenheim* two points on her lee bow, and as soon as she perceives her it is not disputed that she acted very properly in exhibiting a light. Finding that the other vessel does not change her course, she ports her helm, as I understand, at the moment, and then puts it hard to port, so as to bring her sails to shiver in the wind. However, it so happens, that the other vessel came on, right or wrong, and struck her on the starboard side. It appears to me that there can be but one question arising on this point—was there any undue delay in porting

the helm? I cannot represent the *Unition* to be blameable in any other respect than by possibility in the one I am now suggesting for your consideration. With respect to the *Blenheim*, she was a vessel of 225 tons, and was bound, in ballast, from London to the north. According to her representation, she was laid too, and reefing her topsails, with her head N. by W., and had her helm hard a-starboard. The master, in his evidence, states that it was hard a-starboard at the time when the light was shown by the *Unition;* it was seen by the *Blenheim*, but she takes no notice of it. Though it may so happen, that the omission to show a light on the part of the *Blenheim* may not have been the cause of the collision, yet I think it was exceedingly erroneous conduct on the part of her master not to have shown a light to point out the place and position of his vessel. The *Blenheim* represents, that she was in an unmanageable state, but whether she was so or not is a matter entirely for your consideration. If she was not in an unmanageable state, what ought to have been her conduct? According to the evidence of the master of the *Blenheim*, it appears she did nothing; and it will be for you to determine whether she ought to have done anything, or whether there was any sufficient reason for not doing that which the act of parliament prescribes, namely, porting her helm. If you are of opinion that she could not do it, then the maxim of law prevails, that nobody is required to do that which it is impossible for him to do. If you are of opinion that she might have ported her helm, then she is to blame for the collision. You will have the kindness to give me your opinion upon that point.

Capt. Farquharson: We are of opinion that the *Blenheim* might have ported her helm, and we think the *Unition* acted rightly in the course she pursued; that she was not to blame.

Decision of the Court: Now, with respect to the question of the abandonment of this vessel by the master and crew, it having been determined, in consequence of the opinion of the Trinity Masters that the *Blenheim* was to blame for this collision, I must determine whether the usual consequences which would result on such a decree ought not to take place on the present occasion, because blame is attributed to the master and crew of the *Unition* in abandoning her. The principle to which I have always adhered, and to which I shall adhere until otherwise instructed by superior authority, is, that where a collision takes place on a dark night, particularly at a tempestuous period of the year, and where the vessel producing the collision is of greater burthen than the one struck, I cannot possibly settle with satisfaction to my own mind, or security to justice, what ought to be the reasonable extent of fear and apprehension to the crew of the vessel so struck. It is impossible for any court of justice to say with any degree of certainty what are the precise circumstances that would justify the abandonment of a vessel. If there be any reasonable prospect that the lives of the crew are endangered, I have determined, and I will do so until I am overruled, that they are justified in quitting the vessel, and that the consequences must fall on the wrong doer. On the present occasion the vessel was off Flamborough Head, and it is manifest from the evidence on both sides that though there cannot be said to be a gale of wind or a storm, yet the weather was approaching to tempestuous, and the wind was blowing violently. The occurrence took place on the 15th of December, at night, when it was impossible for them to know the weight of the vessel that had struck them, or the extent of damage that was done. The delay of two minutes might have risked valuable life, and I never will put life in competition with property. In the present case there is nothing to induce me to depart from the ordinary rule of condemning the *Blenheim* in the damage done.

The Nostra Signora del Carmen.—Liability of the Owners of a Cargo where it is included in a Bottomry Bond.—On an application for a monition, calling on the owners of the cargo on board this vessel to show cause why they should not bring in the cargo, or an equivalent amount of money, to satisfy the claim of a bottomry bondholder,—

Dr. Lushington gave judgment. It appears that an action was brought by a bottomry bondholder, and that Mr. Clarkson appeared to that action for the owners of the cargo, and gave bail for the sum of £350, to answer the action as related to the cargo. So far as the proceedings came before me, they did not

warrant me in pronouncing any opinion with respect to the cargo itself. The warrant was returned, and the usual defaults were taken against the ship. Whilst they were proceeding, an application was made to pay the wages, and the court allowed them to be paid, together with the costs, out of the proceeds. Now it ultimately turns out that the wages came to so very large an amount, together with the costs incurred in obtaining them, and also the costs in general for the purpose of obtaining the condemnation of the ship, that the value of the ship, together with the £350 for which bail was given, has not been sufficient to pay the bond in full, together with costs. A motion is then made to the court that I would call on the owners of the cargo, but not the bail, for the purpose of paying the balance which may be due to the bottomry bondholder, together with interest from the time at which he is entitled to it at common law, and also the remaining part of the costs not paid. This is a question which, I think, deserves the attention of the court, I accordingly applied my mind to it, to see whether there was any case to guide my course of proceeding; and next, whether there was any principle. It is a question which involves the liability of the owners of a cargo, where the cargo is included in a bottomry bond. It appears to me clear that in the first instance the cargo itself, or its value, must be the limit of that liability. I think so for many reasons. It is, and reasonably may be competent to the master of a ship to render the property liable to a bottomry bond; but the master is not the agent of the owner of the cargo generally. He may become so *ex necessitate* as the cargo is under his charge, but on this principle can the master impose upon the owner of a cargo a personal responsibility; and liability to pay the costs is a personal liability. Nor, as I apprehend, do I know any case whatever in which this has been done under any circumstances. I have searched for the purpose, if possible, of discovering any. Again, in the case of bottomry, when proceedings are taken against a ship and cargo, the owners of the cargo have the opportunity of opposing the validity of the bond or not as they deem fit. The owners of the cargo may have it under arrest, and allow it to be sold. They may not appear to the suit, if they do not think it necessary. In such cases it is clear that the owners of the cargo cannot be made responsible for any costs, however incurred. The owner of a cargo may, however, as in this case, appear and give bail, and the bondholder is entitled to require bail to the full value of the cargo. If he does not do so it is his account, and he must take the consequences. I am of opinion that the liability of the owner of the cargo to costs depends on what is done afterwards. The bail, it is agreed on all hands, cannot be made liable beyond the amount. If the owner of the cargo contests the suit and fails, I should have no hesitation in condemning such owner in costs; the bail to the extent for which it is given might be also liable; but the owner would be liable beyond the amount of the bail, and for this reason bail cannot be demanded beyond the value of the cargo, yet a person may be responsible for a bottomry bond beyond the value of the cargo and for the costs incurred. It is by contesting a suit that the owner becomes liable, as every other suitor does, to costs if unsuccessful. The consequence is evident. If an owner was not liable for costs, he might give bail to the extent of the value, and then carry on an expensive litigation free from liability to costs, and so diminish, if not annihilate, the value of the cargo. It depends, therefore, upon the conduct of the owner of the cargo whether he becomes liable to costs or not. Now, how are the costs in this case incurred? Solely and entirely on account of the ship. There are the costs of proceedings in *pœnam* in no degree occasioned by the owners of the cargo; the costs of the action for wages, aud the wages themselves. None of these costs have been occasioned by the owners of the cargo. The cases cited—the *Hope* and others—are entirely in accordance with the decision I am to pronounce. The *Hope* was a cause of damage, and I might find many differences between a cause of damage and one of bottomry, if necessary, but I do not think it necessary to do so. The owners gave bail; they contested the suit; the bail was insufficient to meet the damage, and the court condemned the owners of the ship to pay the costs, and very properly condemned them. In this case, if there had been a contest by the owners of the cargo, I should have had no hesitation in condemning them in the costs, but as they have done nothing to occasion costs, they are free from the liability. With regard to the bond itself they have given bail for the cargo to the amount required, and their liability is exhausted by the

money paid. Consequently, I am of opinion that I must reject the motion, the owners of the cargo not being liable to make good the bond, nor liable to costs in this case.

ADMIRALTY COURT.—May 8.—*The Kirtons v. the Fairy—Collision.*—This was an action brought by the brig *Kirtons*, (180 tons), against the brig *Fairy*, (190 tons) to recover the loss sustained by reason of an alleged collision between them off Cromer, about 8 P.M., on the 26th of February, 1853. Both the brigs were proceeding in ballast from Shoreham; the *Kirtons* to Hartlepool, and the *Fairy* to Shields. On the part of the *Kirtons* it was pleaded that she was on the larboard tack, and on descrying the *Fairy* on the starboard tack ported her helm, but the *Fairy*, instead of obeying the rules of navigation and keeping her course, starboarded her helm and ran into the *Kirtons*. The *Fairy* admitted that she had been in collision with a vessel that evening, but denied that it was the *Kirtons*. It appeared that the night was stormy, and that several collisions occurred about the time in question in the neighbourhood of Cromer.

The Court, in addressing the Elder Brethren, laid before them the various nautical questions arising from the case, and then in continuation said, "There is, however, another point to which it is my duty to call your attention. It does not appear that a light was hoisted or shown at all on board either vessel. You know perfectly well that I have to carry out the provisions of an Act of Parliament with reference to that matter. The question then arises, whether, under the circumstances, the *Kirtons* ought not to have hoisted a light as soon as she descried the vessel approaching on the starboard tack. I do not know that you will have much difficulty in solving that question. The next question is, however, one of great difficulty; because, according to the 28th section, we must see whether the not exhibiting a light was the cause of the collision. I shall be under the necessity of asking you whether the collision was occasioned by the non-observance of the rule of hoisting a light. If the collision was occasioned by that neglect, then it will be for the court to determine the case according to the true construction of the statute."

The Elder Brethren having retired for consultation, on their return, Dr. Lushington, in giving the decision, concluded as follows:—

"With regard to the next part of the case it appears that neither ship showed a light. The Trinity Masters are of opinion that it was the duty of both ships to show a light. They are further of opinion that if the duty had been complied with there would have been no collision, consequently they are of opinion that the neglect to show a light was the occasion of the collision. I concur in these opinions, and under the circumstances the *Kirtons* cannot recover."

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from April 25 *to May* 29, 1854.

Plymouth Breakwater Light.—On and after 1st June next a Single Bright Light will be exhibited in the Breakwater Lighthouse, to become visible immediately upon passing the Draystone Buoy, from the Westward, and the Buoy of the Knap, from the Eastward.

This Light will be shown from a Window in the Tower, 15 feet below the present light; and masters of vessels are to observe, that it will be seen only between the lines of bearing, from the Breakwater Lighthouse, of the Buoys abovementioned.

Bristol Channel, Avon Lighthouse.—On and after the 10th day of May, 1854, a Red Light is to be exhibited from the above Lighthouse, to mark the entrance of the Swatchway; and that, by keeping the same in sight, vessels will enter the river in the deepest water.

Lighthouse at Winterton.—With the object of rendering the Lighthouse at Winterton more distinctly visible from Vessels at Sea during the day-time, the Tower is about to be colored Red. The buildings around it will continue White, as they are at present.

Navigation into Spithead.—A Floating Light Vessel has been moored on the West Side of the Channel, near to the Warner Shoal, and a Light is now exhibited therefrom every night from sunset to sunrise, for the purpose of facilitating the navigation of vessels into and out of Spithead, during the night-time.

The Light at this station is of the natural color, revolves, and shows a bright flash, once in every minute, and the vessel is moored in 13 fathoms at Low Water Spring Tides, with the following Marks and Compass Bearings:—viz.:

The Water Mill at St. Helen's, half its breadth open of St. Helen's Sea Mark	S.W. by W. ½ W.
The Outer End of Ryde Pier, between the Towers of Osborne	N.W. by W.
Noman's Land Buoy	N.W. by N.
Horse Elbow Buoy	N.E. ¾ N.
Dean Tail Buoy	E.S.E.
Bembridge Light Vessel	S. ¾ E.

Light Vessels off the Frying-Pan Shoals, Cape Fear (N.C., U.S.)—A Light Vessel will be placed, during the month of April, 1854, off the Southern extremity of the Frying Pan Shoals.

Two Lights will be shown from this Vessel, at an elevation of about 40 feet above the level of the Sea. This vessel has two Masts—is about 100 feet long—250 tons, and the top of the gunwale about 10 feet from the water line.

The hull is painted yellow, with "Frying Pan Shoals" in large black letters on both sides. The lower masts are painted yellow—the top masts white, with an open-work oval day-mark, five feet in diameter, painted black, at an elevation of about 55 feet above the water line.

This vessel will be placed in 9 or 10 fathoms water, at the distance of about 19 nautical miles from the Bald Head Lighthouse, and about 23 nautical miles from the Federal Point Lighthouse, off the Southern extremity of the shoals making out in about a S.S.E. direction from Cape Fear.

The following magnetic bearings will show the approximate position of this vessel.

From Light Vessel to Bald Head Lighthouse, N.N.W ½ W.
From Light Vessel to Federal Point Lighthouse, N. by W.
From Light Vessel to centre of outer breakers, N.N.W. ½ W.

The Southern extremity of the breakers, with only 10 feet of water upon them, will be about 4 nautical miles inside of the position of the vessel. A shoal spot, with 16 feet of water on it, will bear about N.W. ¼ N., distant about 2½ nautical miles, and another shoal spot, with 18 feet of water on it, will bear about N. ¼ E., distant 1½ nautical miles from the vessel.

The soundings to the Eastward of the position of this Light Vessel will be found to be, in general, gradual and uniform, from 10 to about 6 fathoms before deepening, after crossing the outer extremity of the Shoal in the vicinity of the Light Vessel; and the soundings to the Westward gradually deepening from the vicinity of the Vessel, from 9 and 10 to 15, 17, &c. fathoms.

Sailing Vessels of heavy draught should not be run in bad weather into less than 15 to 18 fathoms water in passing these Shoals. Steamers and Small Sail Vessels may be run with safety, under ordinary circumstances of weather, on the line East and West, upon which the Light Vessel will be placed.

Navigation of the River Tees.—The South Gare Sand has extended to the North-west; and No. 1 White Buoy has been moved in that direction into seven feet Low Water Spring Tides; and No. 1 Black Buoy has also been moved to the North-West into seven feet Low Water Spring Tides.

In consequence of the above alterations, it is necessary that Masters of Ships taking the Tees should be cautious in so doing, as the Bran Sand Lights in one, lead very near to No. 1 White Buoy.

Yarmouth Sands, South Scroby Spit.—The South Scroby Spit having grown out to the Westward, the Buoy on that Spit (Black and White chequered) has been moved out about a cable's length in that direction, into seven fathoms Low Water Spring Tides, with the following Marks and Compass Bearings, viz.:—

Denny's Look-out, in line with St. George's Chapel	N.N.W. ½ W.
Lowestoft Low Light, its apparent length open to the Eastward of the Gas-house Chimney.........	S.W. ¾ S.
St. Nicholas Light Vessel...........................	N. by W. ¼ W.
Scroby Fork Buoy....................................	N. ¾ E.
South Scroby Buoy	S. by E. ½ E.

River Schelde.—In consequence of the giving way of the Western Point of the Sand Bank, on the Kaloot, Western Schelde, the White Buoy stationed, on sailing up from Flushing, has, to prevent misdirection, been removed from that Point, and that in lieu thereof, in a more easterly direction upwards, a Red Buoy has been placed at 3½ fathoms depth, showing:—

The Castle of Rammekens close outside of the corner of the Sea Dyke to the Eastward of the South Watering.

The Orange Mill of Flushing against the first Berm to the Eastward of the Dock Harbour.

Proposed Lights on both sides of the Old Bahama Channel.—Arrangements are in progress for erecting Lighthouses on both sides of the Old Bahama Channel, with the view of enabling vessels bound to the Havana from Europe and all places to the Eastward to avail themselves of that passage, and so materially shorten their voyages.

Flinders Light, Gabo Island, Australia.—The Lighthouse on Gabo Island, off Cape Howe, is situated in Latitude 37° 34′ 20″ South; Longitude 149° 54′ 40″ East.

It was completed and lighted on the 28th November, 1853, and a light will be exhibited from sunset to sunrise.

The Lighthouse is a skeleton timber erection, painted White; the roof and framing of the lantern painted Red; and the ventilating ball painted Yellow.

It stands nearly in the centre of the Island, about three-quarters of a mile from its Southern point, upon a sand hill, 157½ feet above the Sea. The centre of the Light is 21½ feet above the sand, making a total of 179 feet above the Sea.

The following magnetic bearings are taken from the Lighthouse:—Cape Howe, N. 32° E.; Ram Head, S.W.; Variation of compass, 11° E.

The Light is a Fixed White Light, illuminating the whole horizon.

The Light is eclipsed by a small range of sand hills from S. 15° E. to S. 4° W. (in all 19 degrees), to a distance averaging about two miles out to Sea.

It is estimated that the Light can be seen twenty miles distant in clear weather.

Port of Swinemunde.—The hill situated near the village of "Osternothhafen," known by the name of "Siebenfichtenberg," with seven large fir trees on its top, which appears to vessels arriving before the port of Swinemunde from N.E. to N. and from N.W. in a distance of 2 to 2½ leagues, and is forming one of the marks of the said port of Swinemunde, is to be levelled in the course of the month of July of this year.

Mariners are informed that in the place of this mark no other will be erected for some time, so that the said port of Swinemunde in future is to be recognized only by the other marks already known, viz. the land marks on the "Streckelberg," and on the "Kiesberg," the Light and the Beacon on the East Mole, and the Beacon in the Eastern Downs.

Removal of the Lights and Beacons in the Gulfs of Finland and Bothnia.—The Financial Department of the Imperial Senate for Finland has communicated that the following resolutions relative to the hostilities, and the defence of Finland against hostile aggression, have been proposed by the Navy Board, and sanctioned, viz.:—

1st.—All Lights on the Coast of Finland (the Light established at Ekerö for the benefit of the postal communication to Sweden included) shall not be lit until further notice be given; with the exception of the Lights of Norskärs and Euskärs, in the Gulf of Bothnia, which shall burn as heretofore, but shall be extinguished as soon as a ship belonging to the enemy makes her appearance in the neighbourhood.

2nd.—The Pilot-stations on the outer coast of the Gulf of Finland, and the inner Pilot-station at the Forkala-Odde, as also those of Aland and Signilskär, shall be removed to the nearest place inside the Islands, or to the Mainland; with the exception of the Pilot-station at Pellinde on Glasholm, which shall remain for the purpose of piloting vessels going inside the Islands along the Sodrä Pellinge. All pilots to the Northward of Aland, and all along the coast of the Gulf of Bothnia, shall remain at their stations until they receive further notice, provided always that none of the enemy's ships made their appearance thereabouts, in which case they, like the rest of the Pilots, shall depart without delay.

3rd.—All Beacons and Seamarks established on the outer coast and at the entrance from the Sea, shall be removed; and should the Director of Lights and Pilots see fit, all the marks and beacons on both sides of the fairway of the inner Pilot-station at Forkala-Odde shall likewise be taken away.

4th.—Should Hangö-Odde be occupied by the enemy, not only the pilots shall depart, but all the seamarks shall be taken away from Jungforasund, and from both entrances to Pargas.

Changes of Lights at Cape Hatteras, Body's Island, and Ocracoke (Coast of North Carolina, U. S.)—The proposed changes will take place simultaneously at the three above-named Lighthouses on the night of the 1st of June, 1854.

Cape Hatteras Light will be a Flashing White Light, exhibiting in every 20 seconds of time, a brilliant white flash of 8 seconds duration, followed by a total eclipse of 12 seconds duration.

At the distance of 14 to 18 miles, the duration of the flash will be somewhat less, and that of the eclipse proportionably greater.

The height of the tower from the ground to the top of the lanthern is 140 feet.

The color of the tower from the ground to the height of 20 feet is Grey, and the remainder Red.

The tower is placed about 2 miles from the point of the Cape, on the southward and eastward extremity of a long ridge of white and naked sand, backed by woods.

The space of about 2 miles, between the Lighthouse and the pitch of the Cape, is a low flat and bare sand beach, very little above extreme high water.

The Light will be 150 feet above the level of the Sea, and should be seen, in good weather, 19 nautical, or 22 statute miles.

At *Body Island* a Fixed White Light, varied by alternate Red and White flashes: the White flashes should be seen 13 nautical miles, in good weather—the fixed light not quite so far as the White flashes, and the Red flashes at a less distance than the fixed White light.

Ocracoke.—Vide *Mer. Mar. Mag.*—March, p. 112.

Position of the Submarine Telegraph in Great and Little Belts, and the Beacons connected with it.—A submarine cable having been laid down as well in Great as Little Belt, in order to point out the

direction of the said cables, the following Beacons painted White have been placed:—

1.—*For the Submarine Cable in Great Belt.*—(a) On Fune, about ½ a mile of Knudshoved, two Beacons, in a W. ½ S. and E. ½ N. direction, indicating the line of the said cable from Knudshoved to Sprogö.

(b) On Sealand, Northward of Körsor town, two similar Beacons, in a W. ½ N. and E. ½ S. direction, to show how the cable lies between Sprogö and Korsör.

(c) South of Sprogö, Buoys have been laid down for the purpose of indicating the situation of the cable at that place.

2.—*For the Submarine Cable in Little Belt.*—On Fune, a little Eastward of Stribs Point, two Beacons, which kept in one in a N.N.W. ½ N. and S.S.E. ½ S. direction, indicate the bed of the cable between Fredericia and Fune.

Mariners are requested not to anchor with these Marks or Bearings on, lest, by so doing, they damage the Electric Cable, or lose their own anchors, and to follow the direction given by pilots or other functionaries on this account.

NAUTICAL NOTES.

Prospects of Commerce and Trade.

If the year of our Lord 1854 shall hereafter be famous in the annals of history for the recurrence of a bitter Continental War, after an enduring Peace of forty years, it will, at the same time, be distinguished for various benefits conferred upon Commerce, Civilisation, and the advancement of Nations in the scale of social progress. The heavy thunder-cloud of War—charged, as it is, with its lightning flashes and its destructive effects—may, as is found to prevail in the visible atmosphere around and about us, be attended with ulterior beneficial effects; and, dark and lowering as it looms at present, it is not without its silver lining. The observant eye, even now, detects bright gleams of sunshine and prosperity identified with the current year, which cannot fail to give satisfaction to the Merchant or Manufacturer, as he casts a hopeful glance over the future, and scans the vista of coming events. No short period has, probably, before been characterised by so many interesting announcements, pregnant with results of deep importance to our swelling Commerce, as the first three months of 1854. New marts are opening up day by day for British Trade and Manufactures. Our Colonial progress is steady and prosperous; and all classes at home and abroad share in the common weal.

Steamers are now on the interior waters of Australia, opening up, to profitable Commerce, regions heretofore almost shut out from communication with the sea, and thus removing the idea that *there* drought prevailed, and that no passage for produce could be obtained. Rivers which the Colonists never thought navigable have, by British enterprise, become changed in their aspect, and the Murray and its tributaries now bear down to the sea rich cargoes of wool, tallow, and Colonial produce, to the surprise and delight of the squatter, and the manifest

enhancement in value of his lands and his flocks. Another vast continent, South America, is opening up its interior treasures to Commerce—furnishing new markets for our manufactures, new fields for agricultural and industrial enterprise, and, doubtless, numberless new products from regions unknown and unexplored, but abounding in all that can minister to the wants of man. The steamer now floats proudly on the Magdalena, stems the broad torrent of the Amazon and its confluents, penetrates into the interior rivers of Peru, and traces the important affluents of the Rio de la Plata, into Paraguay and Brazil. Who can tell the benefits which shall result to the various South American Republics from the extension of steam into the great watershed of the Continent—thus opening up the highways which Providence has munificently supplied? The inhabitants are no longer shut out from communication with the sea, and produce, which formerly had to be conveyed long and expensive journeys by land, on the backs of mules or alpacas, and then by circuitous voyages on the Pacific and round the Horn, can now be brought promptly and economically direct to the Atlantic ports in a brief space of time, and at little cost, for shipment to European markets.

Turn we to the opposite Continent. The interior of Africa is no longer the *terra incognita* of former days. The Niger has been explored by steam, and the enterprise of Mr. LAIRD has opened up numberless new channels of Commerce. The legitimate Trade of Western Africa—its palm and nut oil, its cottons and its fruits—have taken the place of the base traffic in human beings. Our travellers penetrate to Timbuctoo and Lake Tsad. The Orange River Sovereignty and the Trans-vaal Republic form the connecting links with Natal, through which British goods are transmitted by the plodding Dutch settlers in exchange for wool, ivory, wax, and skins, and other valuable African produce. Madagascar, thanks to the Merchants of Mauritius, is once more open as a market for British goods. Passing eastward, we find the empire of China becoming every day more accessible to European Commerce and influence. Our Merchants and Travellers find easy access, and the wall of exclusion has been now broken down by the progress of civil dissensions. Even the hermetically-sealed sister empire of Japan gives signs of animation, and promises, with maiden modesty, to entertain the urgent addresses of her Commercial suitors, if they will but allow her time for reflection on the subject. The junction of the Atlantic and Pacific has at last been taken up in earnest, and the joint scientific explorations of the three great Maritime powers must inevitably result in an amount of information calculated to be generally useful, and to bring about, at no very distant period, this long-mooted project. Each and all of these are subjects of importance to the British Mercantile and Shipping Interests.

In short, if we but glance over our various Colonies and Possessions, we shall find most of them contributing largely to the wealth and comfort of the mother country. All appear to be flourishing; all highly prosperous, all prosecuting with untiring zeal their endeavours to draw forth the latent energies and peculiar products of the soil. Canada, with its wheat and its shipping, and the Lower British Pro-

vinces, with their shipbuilding, fisheries, and minerals, were never so prosperous as in the outset of 1854. The West Indians, by economy, science, and industry, are producing the largest sugar crop of many years past, and only complain of a want of shipping to dispatch their produce. The Cape Colony—now the halfway-house to that vast *entrepot* of Commerce, Australia—has made rapid strides, since the internal dissensions of the Colony have subsided. Its wool and its wines find a ready market, at enhanced prices. Mauritius is raising such enormous sugar crops as almost to surpass belief, and is over-burdened with the weight of its riches—the fruits of steady application and careful industry on the part of its Planters and Merchants. Ceylon is producing, year by year, enhanced amounts of the finest coffee, cinnamon, coir, and cocoa-nut oil. Sixty thousand acres are now under cultivation in this island with coffee, producing a crop of 360,000 cwt. British India is rolling in riches, and finds, in fact, no vent for its surplus capital—the profitable result of close attention to the cultivation of cotton, indigo, opium, sugar, rice, drugs, and numberless fibres. Pinang, Malacca, and Singapore send us increasing quantities—but not larger than our demands—of their tin, spices, sago, gambier, and gutta percha—the latter, scarcely known ten years ago, was shipped to the extent of 30,500 cwt. last year. Australia, peopled as it were within the last two years by gold-seekers, presents such unexampled wealth, such important marts for British produce and manufactures, as were never previously known in the world's history. Colonies, the growth of but yesterday, have sprung up into giant stature, and bid fair to outstrip European kingdoms in their political status, their rank as Commercial countries, and in the rapid development of their productive resources. Even the less-favoured Colonies of New Zealand, and Van Diemen's Land, at least come in for a share of the general prosperity, by the large demand for their agricultural produce—their grain, flour, flax, and timber—which find ready markets, and remunerative prices, in Port Philip.

Such, then, are some of the subjects of contemplation for the Merchant and Shipowner in the face of an European war. Such are a few of the prosperous existing markets for our manufactures, and the sources of supply of raw materials for our industry and capital. Such the new fields of Commerce which are opening to our view in 1854; and which, if thrown in the balance, will, at least, outweigh the disadvantages of circumscribed trade with Russia, and exercise some future beneficial effect on individual national interest.—*Shipping and Mercantile Gazette, May 3rd.*

Progress of Shipbuilding.—A return has been completed, showing the progress of shipbuilding in the United Kingdom during the past year, under the stimulus of the high freights caused by the requirements of Australia, the demand for grain, and the general activity of trade. It appears that the total increase upon the preceding year, when this branch of enterprise was already in great prosperity, has been equal, as far as regards carrying capacity, to 21 per cent., the vessels registered in 1853 having been 853, of an

aggregate burden of 233,524 tons against 745, with a burden of 192,949 tons in 1852. The constant tendency towards an augmentation of the size of vessels is also observable, the average of those built in 1853 having been 274 tons, against 259 tons in 1852. At the same time, evidence is afforded that, although the progress of shipbuilding in England and Wales is very considerable, it does not keep pace with the rapid advance made in other parts of the kingdom. Thus, while the increase of the tonnage registered in the ports of England and Wales during the past as compared with the preceding year has been 16 per cent., that of Scotland has been 37 per cent., Ireland 85 per cent., and the Channel Islands 64 per cent. Even reckoning this increase, however, the number of vessels constructed out of England is, with the exception of Scotland, insignificant. Subjoined is a table exhibiting the relative figures for each part of the United Kingdom:—

	1852.		1853.	
	Vessels Registered.	Tonnage.	Vessels Registered.	Tonnage.
England and Wales	583	157,326	649	182,489
Scotland	103	30,212	141	41,397
Ireland	28	3,555	31	6,589
Guernsey, &c	31	1,856	32	3,049
	745	192,949	853	233,524

With regard to individual ports, the following indicates the progress of construction at the places of most importance:—

	1852.		1853.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
London	113	48,214	151	62,745
Liverpool	73	37,250	85	45,682
Sunderland	65	20,221	56	17,892
Shields	58	13,754	41	11,615
Newcastle	33	9,661	28	8,060
Bristol	5	524	17	4,010
Whitby	6	1,110	11	2,471
Stockton	9	2,118	4	1,898
Scarborough	2	285	3	1,809
Goole	18	1,793	16	1,750
Hull	17	2,173	10	1,543
Glasgow	33	16,248	34	15,149
Greenock	10	1,421	26	8,938
Dundee	11	3,332	14	3,872
Aberdeen	4	2,418	9	3,848
Belfast	3	1,161	8	3,328
Jersey	23	4,422	16	1,768

Wrecks.—A Parliamentary Return has been issued of the number of Wrecks on the Coast, and the Seas adjacent thereto, during the year 1852, of which the following is a Summary:—

Totally wrecked	500
Totally lost in collision	33
Damaged seriously, and had to discharge	558
Damaged seriously in collision	24
	1,115

The greatest number of casualties occurred in the months of

January, October, November, and December; that is, during the four winter months, when they were respectively as follows:—January, 126; October, 164; November, 169; and December, 268. The latter month was the most fatal, from the severity of the south-west gales, which prevailed for several days, until the close of the year. The total loss of life, as far as it has been ascertained, amounts to 920; of whom 100 were lost by the burning of the *Amazon*. But, besides the large number recorded in the official return, perhaps nearly an equal number has been swallowed up by the deep, of which there is no record.

Apprentices in the Merchant Service.—The following is a Return of the number of Apprentices in the Merchant Sea Service in 1850 and 1854:—1st January, 1850 31,636
1st January, 1854 13,826

NEW BOOKS.

The Log of a Merchant Officer; viewed with reference to the Education of Young Officers and the Youth of the Merchant Service; by Robert Methven, Commander in the Peninsular and Oriental Company: with an Editorial Preface, by Dr. L. Playfair. Illustrated from Sketches by the Author. John Weale, 59, *High Holborn.*

CAPT. METHVEN is already favourably known by the "Narrative of the Blenheim Hurricane in 1851," in which he has contributed sound, practical information, which will be found of the greatest benefit to all who have the responsibility of command in those regions where the cyclone is to be encountered. The present volume, although, as stated in the Editor's Preface, "chiefly valuable as evidence of the deficient state of our Mercantile Marine, given by an officer of ample experience, and not because it enters fully into the means by which the improvements required may be affected," will nevertheless add greatly to the Author's reputation from the unhesitating manner in which he has laid bare those deficiencies, from the masterly style with which he has treated the whole subject he has undertaken to elucidate, and by the manly, considerate spirit evinced throughout. Scarcely a branch of the merchant service is left unnoticed. A work bearing on the various questions (and they are not few) here brought forward has long been wanting; but the value is doubly enhanced when urged by a man of professional skill and practice—one who has experienced the hopes and fears of the service which he desires to elevate to its true level—who understands its wants, and is fully alive to the advantages of education and the philosophy of "common things." We feel so deeply impressed with the statements of Captain Methven and so entirely appreciate his intentions that we purpose devoting a special article to his "Log of a Merchant Officer" in our next number, and we take this opportunity of requesting him to reconsider his proposal "of a more experienced author undertaking the review of a subject involving the safety and

happiness of daily-increasing thousands," and trust that at no distant day it will be found he has resumed his pen for the advantage of the Merchant Service. We strongly recommend all who have the interests of this Service at heart to peruse the work attentively. Those who are just entering on a seafaring life will do well to give it their closest consideration; and if they will endeavour to keep a Journal similar to that proposed by Captain Methven, not only will they themselves derive benefit, but the cause of science will be ultimately promoted.

The book is altogether beautifully got up, and does great credit to the publisher, (Mr. Weale) to whom the public is already largely indebted for the production of many costly and many *very cheap* works, but *all* of great merit.

Lunar & Horary Tables, &c.—Seventh Edit. By Janet Taylor. Minories.

MRS. TAYLOR has been long known to the nautical world as the Authoress of several works designed for the instruction of those engaged in a seafaring life. The present volume contains the Tables which facilitate the determination of the longitude and the time by lunar distance and chronometer, which are prefaced by instructions as to their use, and examples for practice. The Lunar Tables are especially worthy of note as being a very considerable abridgment on the direct spherical method, and if used with care and attention give a result very generally as accurate,—while the time saved in the working of problems by this method will increase their value to the mariner. Having frequently used Mrs. Taylor's Lunar Table, we can speak with confidence on their value, and recommend them to those who are in the habit of making lunar observations.

Hand-Book to the Local Marine Board Examination.—Fifth Edition. Janet Taylor, Minories.

WE have already had occasion to notice favorably a previous edition of this book, which is intended as a guide to officers of the Merchant Service in preparing for examination before the Local Marine Board. A few alterations have been made for this fifth edition, and the examples for practice are adapted to the Nautical Almanac of 1857.

New and Concise Methods of finding the Latitude by the Reduction to the Meridian; the Latitude and Time by Double and Equal Altitudes, &c.; by R. C. Forbes. George Philip & Son, Liverpool.

THIS book consists of a series of tables (to which are prefixed rules and instructions on their use) for the purpose of determining *approximately* the position at sea, by methods somewhat shorter than those usually adopted.

TO CORRESPONDENTS.—*It is particularly requested that all Communications be sent to the Editor as early in the month as possible, and not later than the* 18*th.*

[*All communications to be addressed* "EDITOR OF THE MERCANTILE MARINE MAGAZINE, *care of Mr. W. Foster,* 114, *Fenchurch Street, London.*" *N.B. The real name and address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*]

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

JULY, 1854.

REMARKS ON PASSAGE-ROUTES TO AMERICA DURING THE HURRICANE MONTHS.

As the hurricane season in the Northern Atlantic is approaching, and as the average tracks of Lieut. Maury may probably be adopted both for outward and homeward-bound American passages, it has been deemed advisable to offer for the consideration of Commanders in the Mercantile Marine the following positions of vessels according as they may fall in with certain hurricane winds. The progress that has been made of late years in the knowledge of the "Law of Storms," enables the mariner to calculate with considerable certainty the winds that succeed each other according as he is passing through the one or the other of the stormy semicircles: and with this knowledge he knows when to "carry on" or when to "break off" his course. The labours of Lieut. Maury, combined with those of Col. Reid and other storm investigators, enables him still further to ascertain the localties where he is most likely to fall in with cyclones, and where he may pursue his course with little apprehension of meeting them. We have arrived at an epoch in the history of navigation characterised by a greater approach *to certainty* in our knowledge of winds, currents, and storms, than has yet been attained, and it now remains to *apply* this knowledge to the best of our ability. Knowledge, unless it be applied to practical purposes, or is calculated to expand, enlarge and ennoble the human intellect, is either sterile or absolutely hurtful.

The remarks that follow are more especially addressed to Commanders who are so far acquainted with the "Law of Storms," as readily to detect the presence of a cyclone when as yet the sky and sea betoken but little of that wild impetuosity and ungovernable fury which render it difficult to guide the "gallant ship" so that she can battle with the storm and outlive the tempest. One great advantage

of a knowledge of the "Law of Storms" is doubtless the quick apprehension of indications thrown off from the revolving disc, of the enemy being near. A striking of top-gallant masts and yards, a divestment of the rigging aloft of all top-hamper, a securing of sails, hatches, &c., *in time*, have often been of great service. The hurricane wind, commencing with slight puffs from a certain quarter, a little scud flying over, now and then a squall of wind and rain, perhaps not very violent, may scarcely attract attention, yet these are but the precursors of those violent gales that render it impossible for a ship to escape from their fury, if once it becomes disabled by the loss of some important portions of its rigging. It is therefore recommended that in the months and localities mentioned below, a look-out should be kept on all winds likely to turn out as hurricane winds.

The hurricane season in the Northern Atlantic extends from the latter end of June to the middle of December. Lieut. Maury has given average tracks for vessels from Europe to America, and *vice versâ*. Of these tracks, six appertain to the hurricane season—three from, and three to Europe. We shall first notice the tracks *from* Europe—in these the courses sailed are mostly westerly.

Taking a general westerly course in any part of the northern portion of the Atlantic, the hurricanes moving towards any point between N.N.E. and E.N.E., we have the following results derived from a comparison of the tracks with the "Law of Storms."

Easterly winds.—Ships falling in with easterly winds hauling against the sun or to the N.E., are in the left hand or port semicircle, and may pursue their course not only without inconvenience, but even with benefit from the cyclone winds. See fig. 1.

Southerly winds.—Ships falling in with southerly winds hauling with the sun or to the S.W., are in the right hand semicircle *directly advancing upon the centre.* As soon as the earliest indications of the proximity of the cyclone are perceived, the ship should be headed east or E.S.E., and she should wait until the hurricane makes northing. While waiting on the cyclone, if she find her bad weather to increase, with but little veering of the wind, the ship should stand a little to the eastward to avoid it. See fig. 2.

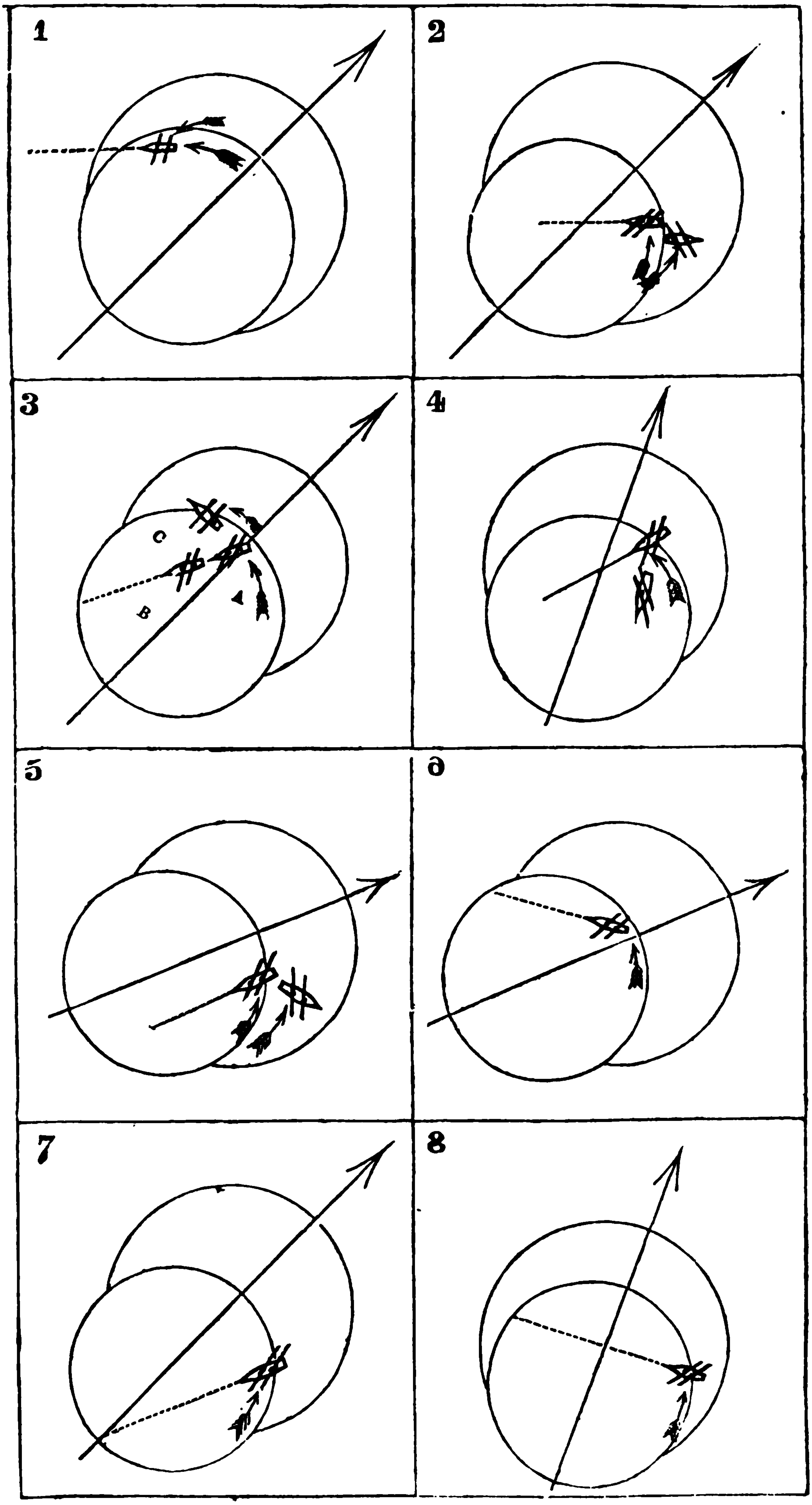
Maury's Track for July. Europe to America.—From longitudes 50° to 65° W., latitude 44°50′ to 40° 14′ N., Maury gives a W.S.W. course. This course is in the very heart of the hurricane locality, the general directions of the storm paths being N.E. and E.N.E.

Up to the present date, so far as we are aware, no hurricanes have been met with in this part of the ocean during the month of July.

Maury's Tracks for August and September. Europe to America.

W.S.W. Course.	August.	Long. 50° to 60° W.
		Lat. 41° 54′ to 38° 44′ N.
	September.	Long. 58° to 65° W.
		Lat. 40° 39′ to 38° 45′ N.

Hurricanes are frequent in August and September. The August track lies a little to the S.E. of the district in which the paths of the centres are most numerous, and ships are consequently likely to meet with southerly winds—to these we shall direct particular attention


1
2
3
C
B
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hereafter. The September track lies much nearer the district of the central paths, and it is highly probable ships may meet the cyclones dead in their teeth, or, in other words, they are likely to sail into a cyclone on a parallel with the axis line.

Easterly winds.—Ships falling in with easterly winds hauling against the sun or to the N.E., may pursue their course, unless the wind becomes inconveniently strong or unequivocal indications are afforded of the hurricane moving more northerly than usual. In such cases a standing to the *west* will generally relieve the vessel.

It is to be remarked, that vessels on Maury's course would but seldom if ever meet with easterly hurricane winds, most of the cyclone tracks being north-west of the ship's track.

South-easterly winds.—Ships falling in with S.E. winds will find it convenient to stand W. or even N.W., as they are met much nearer the axis line than when they experience easterly winds. "Carrying on" is likely to bring the ship *too near* the axis line, even if the hurricane be moving E.N.E.

If the cyclone be moving N.N.E., and the ship meets it on the N.E. quadrant, wind S.E., it is exceedingly probable she will, by "carrying on," sail immediately upon the *centre*, the path of the hurricane being so inclined to the ship's course as to occasion the meeting of the ship and centre in the shortest time possible. In such a case, if the ship sails close hauled, heading S.S.W. in the first instance—immediately on becoming aware of the proximity of the hurricane—and then waiting* until she gets the wind hauling to the west of south, she may afterwards pursue a course parallel to her original one *behind the centre* of the storm. See fig. 4.

If the ship meet a S.E. wind, and the Commander find it rapidly to veer E., with bad weather, and a falling barometer, his "standing on" is assuredly bringing him near the centre ; a W.S.W. course with a S.E. hurricane wind, in the locality marked out by Maury, is fraught with danger. The best course the Commander can adopt is undoubtedly to edge away to the N.W. upon the earliest indications of bad weather, keeping his eye steadily on the barometer, which, if the cyclone be advancing towards the N.E., will assuredly *rise;* but if the course of the storm be more northerly, it will *fall ;* in this case he should edge away still more to the north to keep up his barometer until he has *crossed* the axis line, unless he has reason to believe that he cannot cross it without imminent risk, in which case he may adopt the course recommended in the last paragraph. See figs. 3 & 4.

A Ship meeting cyclone on N.E. quadrant.
B ,, standing on and plunging towards the centre.
C ,, breaking off to N.W. to sail round the northern edge.

The remarks offered, under the head of easterly hurricane winds as to the infrequency of vessels on Maury's track falling in with them,

* If the Commander be reduced to heave-to, and the wind and sea should be very heavy, it will be advisable to "wear" so as to bring the ship to on the starboard tack. See the remarks on *Heaving-to*, page 249.

will also apply to the S.E. winds, with this exception—there is a greater probability of meeting with the latter winds, as occasionally the track of a storm may run S.E. of the ship's course, or even on the course itself; in the latter case the centre of the storm and ship are meeting each other.

Southerly winds.—Ships sailing on Maury's track, and falling in with southerly hurricane winds, will, upon the wind veering, find themselves "headed off." By referring to Maury's table for August, we find, between 50° and 55° W. long., the slants from the northward averaging 19·5 per cent., those from the southward 17 per cent. Commanders, therefore, following the Lieutenant's directions, would stand to the northward, of course running into the vortex. The best manœuvre appears to be to put the ship's head E.S.E., and while "standing on" a short time in this direction the wind will veer westwardly, thereby allowing the course gradually to be changed while the ship is creeping round the southern margin. In such a case as this, detention there must be in some way or another, as the gale proceeds the ship must be more and more "headed off" her course, her only chance being a standing E.S.E. as described above. To adopt Maury's advice without due consideration of all the risks would doubtless run the ship into no ordinary danger, the gales being very severe hereabouts. See fig. 5.

If upon due consideration the Commander should come to the determination to turn his ship's head northward, he could not do better than adopt the directions given in the "Hand-Book of the Law of Storms," which we here quote:—

"*That vessels bound westwardly, when meeting with the starboard side of a revolving storm, should not 'carry on' by which they may sail or steam into the heart of the hurricane, but should sail round the advancing front, so as to make good northing and westing by the help of the south and south-east winds, and take up a good position in the left-hand semicircle, with a fair wind.*

"It is requisite, in sailing round the advancing front, as directed in the above rule, to exercise great caution and to edge away to the N.E., that the vessel be not caught on the axis line *too near* the centre to extricate her from danger. Not only is a close attention to the barometer essential, by keeping it well up, &c., but the manucevre should be executed upon the *earliest* symptoms of the southerly wind setting in, and the Commander should not forget that he is here in the most dangerous quadrant, and by successfully crossing the storm's track, he gets a fair wind for his voyage; whereas, if he "carry on" through the heart of the gale, what he gains one way he loses the other, by meeting with contrary winds, damage, &c. If however the gale should be very extensive, and there should be indications of the Commander being *unable* to cross the axis line successfully, a point that requires the deepest consideration, the best and most prudent course would be to heave-to and allow the centre to pass the meridian of the ship. This will be known by the wind veering to the *west*, and if he find while thus waiting his barometer to fall considerably, and the wind to increase inconveniently in force, a standing to the east or

southward of east will improve his condition until he gets clear of the cyclone."

If the gale should be moving N.E. it would be quite sufficient to bring the ship to on the starboard tack, while the cyclone got northing, and as the wind veered aft, she should stand to the southward to avoid the influence of the hurricane winds till her original course or a parallel one could be resumed. See fig. 7.

Should the hurricane be travelling N.N.E., all that is necessary is to bring the ship to on the *port* tack until she can lie her course. She cannot suffer materially if she fall in with a southerly wind, the cyclone travelling N.N.E. The general direction of the paths are however E.N.E., and the Commander should be perfectly satisfied before heaving to on the port tack that the cyclone is moving N.N.E.

W.N.W. Course. August. Long. 60° to 65° W.
Lat. 38° 44′ to 40° 20′ N.
September. Long. 55° to 58° W.
Lat. 39° 42′ to 40° 39′ N.

Of all the courses a ship may pursue in the hurricane region this is by far the most dangerous, it directly *crosses* the paths of the cyclones as they are coming up from the S.W., and as in the case of a W.S.W. course, in connexion with which we found each wind required a different manœuvre, we arranged our remarks under the heads of hurricane winds, so we shall adopt the same method in treating of a W.N.W. course.

Easterly and South-easterly winds.—In the month of September these winds would be but seldom experienced by ships in the neighbourhood of Maury's track as it lies to the S.E. of the district of central paths. During August it is likely they would be more frequent, especially as ships *near* the parallel of 40°. In this part of the ocean the cyclones are moving towards N.N.E., N.E., or E.N.E.; in the last two instances, *i.e.*, ships falling in with easterly or south-easterly winds, the hurricanes moving N.E. or E.N.E., they may pursue their course, they cannot have better winds, and the cyclone is rapidly leaving them.

If the hurricane be moving towards N.N.E., the ship may still lie her course it is true. With a S.E. wind she is in the *most dangerous quadrant*, but the courses of the ship and cyclone being at right angles to each other, and her distance from the axis line being comparatively short, she soon shoots across it, and is quickly out of further danger.

A word of caution may probably not be out of place in reference to the *turning point* of the course, (as in September,) from W.N.W. to W.S.W. Should the hurricane be coming up *from* W.S.W., by pursuing a W.S.W. course, with a S.E. wind, the Commander would be in precisely the same situation as indicated under the head of *south-easterly winds*, section W.S.W. course, in which a W. or even N.W. course is recommended. A little "carrying on" on the original course would be sufficient to remove the ship from danger.

South-south-easterly winds are very likely to be met with by ships sailing on a W.N.W. course. With the cyclone moving E.N.E.

it is well to "carry on." The ship and gale are every moment parting company, and she has fair winds. See fig. 6.

A W.N.W. course is likely to bring Commanders into very trying circumstances, when the gales are moving more northerly. With a N.E. or N.N.E. cyclone track it would be worse than folly to "stand on" with the wind S.S.E., the ship must be involved. To attempt to sail round the front of the hurricane when on the most northerly track would perhaps be attended with no little difficulty. Numerous circumstances must be taken into the most serious consideration ere the Commander can determine on the course he should pursue. Mr. Piddington's and Col. Reid's remarks on these positions are so much to the purpose that we cannot do better than quote them entire.

Mr. Piddington says, "a vessel from Europe, bound, say to New York, meets with a strong S.S.E. gale and falling barometer, about the meridian of Bermuda. Here the seaman will observe, by the tracks and his storm card, that he is on the *eastern side* of the cyclone, which is travelling *towards* him on an E.N.E. or N.E. course, and that if he "stands on," he will inevitably meet it. To run off to the N.W. till he has brought the wind to at least E.N.E. or N.E., and his barometer is rising, would be the means of getting out of the way of the centre; but it is very uncertain what are the sizes of the cyclones hereabouts, and the distance he might have to run; most seamen will probably therefore prefer heaving-to and allowing the centre to pass them, when the wind will become a fair one."

In a foot note, Mr. Piddington further remarks, "It has been noted before that these situations, when a ship is directly on the average track of a cyclone, are those of the greatest difficulty on two accounts. It is difficult to say beforehand, unless great attention has been paid to the run and veering of the wind, on which side of the track the vessel is; and the rate of travelling is here a serious question on which every thing depends, and it is difficult therefore to judge if by running off for a few hours we shall really be getting farther out of the way. In the instance given above, the centre bears about W.S.W., and the track may be due E.N.E. or N.E. If it be only E.N.E., there might be time to cross in front and round the northern verge of the storm. But if it be travelling N.E., the wind and sea may become too heavy to allow of "standing on," and the run made would only have brought the vessel directly into the path of the focus, with the encumberance of her sail if she meets it unexpectedly."

Col. Sir William Reid has these remarks. "Most of the North Atlantic gales seem to have a north-easterly progression. When ships from Europe bound to America fall into the northern half of these gales, they will have the wind at east and fair for their voyage. If the weather should not be threatening, or the barometer fall rapidly, they should no doubt stand on their course.

"The appearances of the weather, and indications of the barometer, and also the swell of the sea, may be such as may make it very difficult for a Commander to know what course is best to decide upon; thus on the 22nd of August, 1837, the barque *Barlow*, in her voyage from England to St. John's, New Brunswick, stood on in a

gale at S.E. and obtained a fair wind by doing so; passing a ship hove-to, supposed to be the *Mediator*, bound for New York.

"In this instance, the *Mediator* might with advantage have run on like the *Barlow*.

"There may be danger in heaving-to in the North Atlantic with the wind at S.E., and a rapidly falling barometer, lest the gale should be moving N.E. In that case it would be waiting for the hardest part of the gale to pass over the ship.

"On the contrary, the fate of the barque *Carmelita*, in the North Atlantic, is an instance of the risk incurred by scudding in front of a progressive whirlwind, for the sake of profiting by the east wind of the front half of the storm; and it is of the greatest importance to discriminate between scudding in the front half, or hinder half of a progressive whirlwind.

"The *Carmelita* sailed from Fayal for Boston, on the 9th of September, 1848, and had light baffling winds, until the afternoon of the 18th. After that day the *Carmelita* began to feel the east wind of that same storm which caused some degree of alarm at Barbadoes on the 19th of September. By the 23rd, the wind had increased so as to have become a hurricane. The vessel was scudding towards Boston, and the first misfortune which befel her was carrying away the mainyard. From that time began the difficulties and perils incident to a ship in front of an advancing whirlwind tempest. Many of the crew and passengers were drowned, and the ship only kept afloat from the circumstance of her cargo being oil and wine."

From the above extracts, we find that while Mr. Piddington considers that most seamen will prefer heaving-to and allowing the centre to pass them, Col. Reid considers there may be danger in such a proceeding, and undoubtedly there is. If with a S.S.E. wind, the cyclone moving E.N.E., a very common course, the Commander heave-to, he must meet all the brunt of the storm, in fact, the centre will pass over him, and should he not have been careful to bring the ship to on the *right* tack, it is ten to one but she founders. Col. Reid also shews that scudding in *front* of the gale is a dangerous expedient. What then is the seaman to do? Evidently to keep a good look out, and determine well his position in the gale, if he be on the axis line, his best course must surely be to get as quickly as he can into the left-hand semicircle. We disagree with Mr. Piddington, even in countenancing the idea that by heaving-to, and allowing the centre to pass, the wind will become fair, it will certainly not be so on the course we have now under consideration, a S.S.E. wind, the lull and the shift to N.N.W., even supposing the ship bears the terrific wind and sea of the vortex, will head her off her course; whereas, if she run on judiciously, *not scud*, edging away to the northward, if she finds the barometer falling and the wind increasing in force, she must better her position; and if after all the gale should be so extensive that she cannot readily escape from it, she will find by the wind veering to east that she can heave-to in such a part of the semicircle that she may experience less of the violence of the wind. To use the expressive words of Piddington, when a ship is right *before* the path of a tempest,

she "*must* manage to get out of the way of the terrific centre at all events."

Returning to the consideration of cyclones moving N.E. or N.N.E., and ships meeting them on the N.E. quadrant, wind S.S.E., when the Commanders find them to be so extensive that no alternative is left but to bring the ship to, it is exceedingly important to do so on the *right* tack. The general rule is to heave-to in a revolving gale in the northern hemisphere on the "starboard" tack, but the over-anxiety to get to the westward has often kept the ship so long on the "port" tack, that she has not had sufficient canvass set to wear when the sea is getting the control over her. She consequently under such circumstances becomes disabled, and all the disastrous consequences follow that characterise either a too-near approach to the centre of a revolving gale, or a continual falling off, until the ship lays in the trough of the sea.

In the fifteenth edition, page 3, of "Blunt's American Coast Pilot" will be found some very valuable remarks on this subject. As, in many instances, it is very likely ships, in order to make westing and *while it does not blow too hard*, will keep on the "*port*" tack, especially while sailing on a course parallel, but opposite to that of the cyclone, (see fig. 5,) a saving of time being thereby effected—still it is highly essential to know at what time and under what circumstances to "wear," so as to sail *out of the hurricane*, when the wind and sea become too heavy for further progress. The remarks we have just alluded to bear so closely on this head that we cannot do better than to follow Col. Reid's example in quoting them; with a S.S.E. wind cyclone moving N.N.E., the wind veers S. and S.W., (see fig. 8,) and may become so strong and the sea so heavy that the ship must be brought to. The remarks are as follows:—

"*Heaving-to.*—The recent disasters which have occurred to American ships, such as the *Dorchester*, *Medora*, *Ambassador*, and many others, have caused some enquiry; and it has been suggested by experienced men, borne out by the facts, that the disasters may be traced to the 'heaving of ships to' on the wrong tack; that is, that vessels bound to the westward from Europe, instead of 'heaving-to' with their *larboard tacks on board* in a south-west gale, as is too often the case, should 'heave-to' on the *starboard-tack*.

"It is well-known that our westerly gales in the winter season often begin at S. or S.W., and as they increase in intensity, haul round gradually, but sometimes suddenly in a squall to the N.W. Take then the case of a ship bound to the westward, the wind commencing at the S. or S.W., the ship on the larboard tack. The master anxious to get to the westward, carries his canvass as long as possible, and continues on that tack until he has his ship under close-reefed topsails, mizen staysail or trysail, in fact, 'hove-to' on the larboard tack, the sea making heavy from the S.W., the wind keeps hauling to the westward, and the ship falls off with it until she lays in the trough of the sea. The sea then, having the control over, and breaking with its full force on the broadside, there is no canvass at this time set that she can wear under with safety. The ship is then disabled, and some-

times founders. The fact is, over-anxiety to get to the westward has kept the ship too long on this tack.

"Now what is the best course as a general rule to be adopted? We think that the rule should be laid down that when it is blowing so hard as to make it necessary to furl foresail or head-sails, previous to doing so the ship should be wore round, and hove-to on the starboard tack; and as the wind hauls, she comes up heading the sea more and more, until it is on the bow, and of course in the best position to avoid its shock.

"Again, often the wind shifts so suddenly in a S.W. gale, that a ship is taken aback by being on the larboard tack, which is fearful at any time, and particularly at such a time. Those who have experienced it on a winter's passage from Europe, with a crew worked down by hard weather and on a dark night, can only imagine what a scene it is. This cannot occur on being 'hove-to' on the starboard tack."

Southerly winds on this course are always found in the most dangerous quadrant of a gale, the nearer to the axis line the nearer the cyclone is moving towards the east. Under any circumstances it would not be well to "carry on" as the ship would be rapidly nearing the centre. In the case of the hurricane moving E.N.E. it would be better upon the earliest symptoms of the S. wind setting in, to run at first N., and as the wind veered E., make good westing so as to sail round the front of the gale; by this means the course could be resumed as soon as the ship had crossed the axis line. The case would be somewhat similar to that of the barque *Barlow* before quoted.

If the cyclone be moving N.N.E., it would be almost impracticable to sail round the front, (see fig. 8,) and in attempting it much time would be lost. As in the case of a W.S.W. course with a southerly wind, we should be greatly disposed to recommend that the ship should be brought to on the *port* tack. Although in the right-hand semicircle and northern hemisphere, in which all storm writers recommend the starboard tack, yet with wind at S., hurricane moving N.N.E., the ship will, by heaving-to, feel so little of the influence of the cyclone, that her course can be readily resumed as soon as the wind has hauled to S.W. It is true that by resuming her course she will be headed off by westerly breezes, but by waiting a little the hurricane will make northing, which will enable her to stand rather to the north, so that by judiciously *following* the cyclone, as her barometer and wind will allow, she departs as little as possible from her course.

As it is exceedingly important to distinguish between a N.N.E. and E.N.E. course of the cyclones, we append a little table which may probably assist in this matter.

The cyclone moving N.N.E., the hurricane winds to a ship lying-to will be as under:—

S. S.S.W. S.W.

The intensity of these winds will not be very great.

The cyclone moving E.N.E., we have, while lying-to, the following hurricane winds:—

S. S.S.W. S.W. W.S.W. W. W.N.W. N.W.

Of these winds the first and last are of moderate force, but the others are very strong, especially that from W.S.W. If therefore the Commander fall in with a S. wind, from which he concludes that he is on the eastern verge of a cyclone, and he pursues his course, and finds that long before the wind veers to S.S.E. his barometer falls very rapidly, and that he has to shorten sail, he may rest satisfied the hurricane is coming up from W.S.W., and he can adopt the necessary measures for *crossing in front as soon as he finds he must reduce his canvass*, but this manœuvre should not on any account be delayed. If on the other hand the barometer should fall but gradually, and he can carry sail for some time, the wind hauling slowly to S.S.E., he may consider the motion of the cyclone to be more northerly. To push on, however, is to involve himself in the centre or in the terrible sea behind. His best course is evidently to heave-to—if *early*, on the *port* tack—but if he should have "carried on" so far as to be compelled to shorten sail, then the starboard is the tack for reasons before alluded to. We may also remark, that in the first case, the cyclone moving E.N.E., if the attempt to cross should have been delayed or other reasons prevent its accomplishment, then the Commander should lose no time either in bringing the ship to on the starboard tack, or in standing to the eastward, as recommended under the heading *southerly winds*, section W.S.W. course.

S.

ABSTRACT OF THE REPORT OF THE GENERAL SHIPOWNERS' SOCIETY.

(*Annual Meeting, June,* 1854.)

SINCE the presentation of their last report, the attention of the committee has been directed to various subjects of importance. When the last report was presented, the following matters, among others, were enumerated as engaging attention :—The light dues, the passing tolls, the rates for pilotage, the admeasurement of ships for tonnage, salvage claims, and the liability of shipowners. . These and other subjects are now receiving from the Legislature the notice which they so much deserve. For several years past it has been the great endeavour of the committee to urge upon Government the necessity of a measure having for its object the consolidation and simplification, as far as practicable, of the laws and regulations relating to British maritime commerce; and with satisfaction they have now to report that the President of the Board of Trade has introduced such a Bill into Parliament, entitled the "Merchant Shipping Act." This Bill is at present under discussion, the various provisions of which are receiving the attentive consideration of the committee, who have, through a deputation of their number, expressed their views upon it to the President of the Board of Trade, and pointed out various amendments, which they have reason to believe will be attended to. As regards the mode of "measurement," the committee consider it desirable that some definite arrangement on this point should be made, to prevent the

confusion arising from the present system; and they are of opinion that the proposed plan embodied in the Bill is the best that has yet been submitted to them in an official form. They have no desire to interfere with the interests of steam shipowners, but they think that it is but just to the sailing shipowner that a more correct mode of admeasurement should be established, and a system adopted, meting out equal justice to all parties. As regards the law of mortgage, a question has arisen whether it would not be of advantage to the legitimate shipowner, as well as to the parties who assist in fitting out and supplying ships, were an alteration made with respect to the responsibility of mortgagees, to the extent of making the mortgagee liable for the ship's outfits after date of mortgage, and more especially for advances made abroad to enable the ship to proceed on her voyage. At present, as the law stands, the mortgagee is not deemed to be an owner of a ship, or any share therein, and therefore not liable for the ship's outfits, debts, &c. The committee, without giving an opinion on this point, desire to submit it for the consideration of those interested. The most serious point affecting the shipping interest is the responsibility of shipowners. This subject has for years engaged the attention of the committee, who have by deputations and correspondence urged its consideration upon the notice of Government, and which they again did in the strongest manner at their recent interview with the President of the Board of Trade. So far back as 1812 an Act was passed limiting the liability of shipowners, in cases of accidents and otherwise, to the value of his ship and freight. The provisions of this Act remained undisturbed till 1846, when an Act was brought in by Lord Campbell, granting compensation for accidents; and under this Act the shipowner has been made liable, by late decisions of the courts of law, in cases of personal injury, to the whole extent of his property. In the "Merchant Shipping Act" Bill there is a clause freeing the owner and master from any liability when the ship is under the charge of a qualified pilot; and as, by the provisions of the Mercantile Marine Act, the Legislature have stepped in between the owners and men to regulate their engagements and agreements, and as no owner can employ a master or officers, unless certified by the Board of Trade to be fit and competent persons to navigate his ship, it does appear hard that he should be made liable to the whole extent of his property for the act of those who have been employed by him on the strength of a certificate of competency received from Government. The committee have reason to believe that the strong representations made by themselves and others will be attended to, and a clause introduced into the new Bill, limiting the responsibility of shipowners to the value of the ship and freight. The committee, having heard that a representation had been made to the Government for the insertion of a clause in the "Merchant Shipping Act," making it compulsory upon shipowners to take a certain number of apprentices in the manning of their vessels, and being unable to see the justice or propriety of such a course, represented their views to the President of the Board of Trade, and the opinions expressed they have reason to believe are supported by the majority of the shipping interest throughout the country.

The above is a summary of what, during the past year, engaged the attention of the committee; and, though by reason of Australian emigration and the war with Russia the depression so long resting upon the shipping trade has been removed, yet they desire to remind those engaged in this important interest, that in its future prospects there is still abundant cause for watchfulness. In the pursuit of important objects constantly submitted to, and pressed upon the notice of the committee, they cannot but feel the little support and encouragement received at the hands of the shipping interest. Labouring assiduously and gratuitously, they do not consider that they are asking too much when they, in return for their exertions, seek the co-operation and support of those whose property they protect. The committee have every disposition to continue to devote their time and attention to the furtherance of the shipping interest in general, but it must be obvious that, unless they are encouraged by the countenance and support of shipowners and others engaged in maritime commerce, they will be unable to pursue to a successful issue any measures of importance. In conclusion, the committee feel that so long as this institution is conducted on broad and liberal principles, having no personal, local, or party considerations, it has a just right to claim the aid of every shipowner, not only to encourage the committee in their personal efforts, but to enable them greatly to extend their sphere of usefulness.

ADJUSTMENT OF COMPASSES.

[*To the Editor of the Mercantile Marine Magazine.*]

SIR,—In reply to old Mr. Salt's query, in your May number, "Why do Masters of iron vessels leave to others a duty (affecting the lives of all on board) of such importance as the swinging of the ships they command?" I will take the liberty of saying that it cannot proceed from want of sufficient interest in, or knowledge of the subject, for with the intelligence now abroad, and the various works on magnetism, no man can be *ignorant* of the principles on which the adjustments of his compass are made, nor *indifferent* to a matter so all-important in navigating an iron ship. Commanders will tell old Mr. Salt, that at the time a vessel is to be swung, they are overwhelmed with the cares of getting ready for sea—their minds are distracted by the variety of duties devolving on them, and therefore they gladly cede into more efficient hands so important and all-absorbing a responsibility as adjusting their compasses. It is difficult to imagine how the whole rank and file of opticians can have so offended old Mr. Salt as to call forth comments so depreciatory of their talents and capabilities. Surely it must be admitted by the unprejudiced, that those who devote so much time and attention to the construction of the compass, must know something about the laws which govern, and the disturbing causes which affect its action; and if old Mr. Salt will try back only a little, he will find that most of the improvements made in that and other instruments used on board ship, have been made by landsmen.

No doubt, in old Mr. Salt's seagoing days, he knew much less about the compass, (and had besides a very different kind of instrument to deal with,) than the Commanders of the present day, who are too much enlightened to allow themselves to be either "humbugged" or "bounced" out of a knowledge, so important to them, by old Mr. Salt's adjusting jugglers—the simple principle adopted to counteract the influence of the mighty floating mass of iron, which surrounds the little guardian of the ship is self-evident, and although so easy in application, old Mr. Salt might not find the office quite so much of a sinecure, nor so profitable, as he would lead the public to believe. Were he to take a turn amongst some of the opticians, he might find that they are not only "up to a thing or two," but are possessed of scientific knowledge which they are daily developing for the benefit of the seagoing public, and, if we may judge from the broad fact of *our fleet of iron vessels having been able to navigate in safety for some years past the most intricate passages both at home and abroad*, that they are likewise capable of applying their scientific knowledge to effecting the nice adjustment of the compass on board iron ships, whatever means they may please to adopt. In this enlightened period there can be no mystery about the compass beyond its own mysterious workings, and the best energies of those employed in manufacturing an instrument of so much importance in this iron age, are taxed to the utmost to make it a good and efficient guide under all the adverse circumstances by which it is surrounded. The *slap-dash* manner in which old Mr. Salt's "old recollections and prepossessions" induce him to dispose of the subject, is not only unjust towards those who have proved by what they have done *that he knows nothing about them or their qualifications*, but is unsuited to the discussion of grave and scientific matters, while at the same time it is apt to carry away and mislead those who have no opportunity of judging for themselves, and I therefore trust you will allow me to take up the gauntlet so unceremoniously thrown down by old Mr. Salt, and to subscribe myself, with sincere wishes for the success of your periodical,

JANET TAYLOR, *an Adjuster*.

104, *Minories, London*.

POSITION OF MATES.

[*To the Editor of the Mercantile Marine Magazine.*]

SIR,—I wish to make a few observations on the treatment to which Officers (Mates) in the Merchant Service, are, at times, subjected. A young man enters the employ of an Owner, and is promised that at an early opportunity he will be promoted to a command. On the return of the vessel the Owner has a friend he wishes to oblige, and the Mate, (who has been used as a stop-gap,) is told that his services are no longer required. It would be well, however, if this was the utmost inconvenience to which the Mate is put. It sometimes happens that he is not paid and discharged as early as he might be; but a few weeks elapse during which, whatever eligible opportunities occur in any other

direction, he is totally disqualified to accept of any one of them, since he is not legally capable of doing so without his discharge. It is true he might sue for ten days' pay on account of the detention, but this is not always an adequate remuneration—added to which, when an officer resorts to the processes of a police court he is not likely to be speedily employed by either Owner or Captain, however just may have been the nature of his claim.

Again, it may happen that there have been some points of disagreement between the Captain and Mate during the voyage—the result is almost invariably to the prejudice of the latter, let the justice of the case be what it may. The Captain has the ear of the Owner, and ten or twelve years of most unexceptionable character is of no use to the Mate, who is at once dismissed from the employ without a hearing—to which he is by right entitled.

It is really difficult in these times to know how to act—a Mate takes part with passengers against the Captain—he is dismissed, and finds it difficult to procure further employment. A Mate sides with the Captain, and he is in the same predicament; surely it is but fair that both sides of the question be heard, and an investigation into the circumstances of the case take place before a decision is made by the Owner. A man has a right to be heard in defence or extenuation, and his character should not be at the mercy of any person who may have a prejudice or pique against him.

For years past the best Officers and Seamen have been leaving the country to seek employment where they meet with more consideration than at home. Scarcity in both does not seem to have wrought much improvement beyond compelling Owners to pay better wages than before.—I am, yours obediently,

A MATE.

London, June 16th, 1854.

THE MARINER'S COMPASS.

(*Continued from page* 214.)

BY a comparison of the observations of Sir James Ross, with those of Erman, it would seem that towards the South Pole the terrestrial magnetic force increases in the ratio of 1 to 2·93—the greatest intensity (2·071) according to the former, being in lat. 60° 19′ S., long. 131° 20′ E., where the inclination was 83° 31′; and the least intensity (0·706) according to the latter, in lat. 20° S., long. 37° 24′ W., where the inclination was only 7° 55′*

"From the profound inquiries of Gauss it appears that the total and absolute terrestrial magnetic force, considering the earth as a magnet, is equal to six magnetic steel bars of a pound weight, magnetised to saturation for every cubic yard of surface; compared with one such bar the

* The unit of intensity being that observed by Humboldt on the magnetic equator in the north of Peru.

total magnetism of the earth is as 8, 464,000,000,000,000,000,000: 1, a most inconceivable proportion."*

Irregular Motions of the Magnetic Needle.—Besides the various changes to which reference has already been made, the magnetic needle is at times disturbed in a very peculiar manner, exhibiting a vibratory or (more correctly) shivering motion, and during this disturbance it oscillates several degrees on each side of its mean position. The attention of Humboldt was called to these perturbations during the years 1806—7, and he designates them as "magnetic storms." They are sometimes local, and sometimes extend over a wide area. In a note appended to the "Cosmos," speaking of their occurrence, he mentions that an extraordinary disturbance was felt in the mines at Freiberg, but was not perceptible at Berlin: that magnetic storms, which were simultaneously felt from Sicily to Upsala, did not extend from Upsala to Alten; and, among the numerous examples that have been recently observed of perturbations occurring simultaneously and extending over wide portions of the earth's surface, one of the most remarkable is that of 25th September, 1841, which was observed at Toronto in Canada, at the Cape of Good Hope, at Prague, and in Van Dieman's Land.

During the middle of the last century observations had led to the supposition that some mysterious connection existed between the aurora borealis and the magnetic needle; subsequent investigations tended to confirm this view, and Dalton considered the aurora as a magnetic phenomenon, whose beams are controlled by the earth's magnetism; while Capt. Back, during his residence in the Arctic Circle in 1833—5, remarked that "brilliant and active coruscations of the aurora borealis, when seen through a hazy atmosphere, and exhibiting the prismatic colors, almost invariably affected the needle. On the contrary, a very bright aurora, though attended by motion, and even tinged with a dullish red and a yellow, in a clear blue sky, seldom produced any sensible change, beyond, at the most, a tremulous motion." The disturbance of the magnetic needle has also indicated the existence of the aurora before its light was visible in the horizon; but the oscillation is greatest when the aurora is in the zenith: it is extremely probable, however, that the perturbation of the needle and the presence of the aurora are concomitant phenomena arising out of the same cause. According to Humboldt, the latter may be regarded as the act of discharge at the conclusion of a magnetic storm, as the flash of lightning indicates the restoration of the disturbed equilibrium in the distribution of electricity.

Local Attraction.—Nearly 180 years ago it was first remarked that from some cause or other, but evidently from an influence within the ship, the compass deviated from the magnetic meridian in such a manner as to produce at times a considerable divergence from the course on which it had been presumed the vessel was sailing. Among the earliest observers who recorded the irregularities of this description was William Dampier. At a later period, during the voyages of Capt. Cook, similar irregularities were noticed by Mr. Wales, who accompanied

* "Rudimentary Magnetism," by Sir W. Snow Harris, Part III—100.

the great navigator in the capacity of astronomer, and he remarks that "variations, observed with the ship's head in different positions, and even in different parts of her, will materially differ from one another, and much more will observations observed on board different ships." The subject was again prominently brought forward by the master of H. M. S. *Glory*, Mr. Downie, in 1790, who not only states the fact of the deviation of the compass, but very distinctly points out the cause in the following observations:—"I am convinced that the quantity and vicinity of iron in most ships has an effect in attracting the needle; for it is found by experience that the needle will not always point in the same direction when placed in different parts of a ship; also, it is very easily found that two ships, steering the same course by their respective compasses, will not go exactly parallel to each other; yet, when their compasses are on board the same ship, they will agree exactly;" and again "in all latitudes, at any distance from the magnetic equator, the upper ends of iron bolts acquire an opposite polarity to that of the latitude."

Valuable information, corroborative of the same views, were obtained from the observations of Capt. Flinders, of H. M. S. *Investigator*, while employed in the survey of Australia. His remarks are of sufficient importance to be given at some length, being the results of the experience of an able and thoroughly-practical seaman:—

"Several instances have been mentioned, in the course of this voyage, where the compass showed a different variation on being removed from one part of the ship to another; thus, observations on the binnacle gave $29\frac{1}{2}°$ off the Start, where the true variation was about $25\frac{1}{2}°$ west; while others taken upon the booms, before the main-mast, 68 miles lower down Channel, gave only $24°$; and in experiments made with five compasses the mean variation of the binnacle was $4° 37'$ greater than on the booms. Finding that the situation of the compass was an object of importance, I determined very early in the voyage to place it always upon the binnacle, both when taking bearings for the survey, and when observing azimuths or amplitudes; nor, in any observations taken by myself, was it ever displaced, except by way of experiment: but the officers occasionally observed from different parts of the ship, when the sun could not be seen from the binnacle, until they were convinced that such observations were of no utility, either to the survey, or for ascertaining the true variation.

"It soon became evident, however, that keeping the compass to one spot was not sufficient alone to ensure accuracy; a change in the direction of the ship's head was also found to make a difference in the needle; and it was necessary to ascertain the nature and proportional quantity of this difference before a remedy could be applied. This inquiry was attended with many difficulties, and no satisfactory conclusion could be drawn until a great variety of observations were collected; it then appeared, that when the ship's head was on the eastern side of the meridian, the differences were mostly one way, and when on the western side they were the contrary; whence I judged, that the iron in the ship had an attraction on the needle, and drew it forward; but there was this remarkable distinction in the northern

hemisphere,—it was the north end of the needle which was attracted; and, in the southern hemisphere, it was the south end. In the instance off the Start, before cited, when the ship's head was west, the north end of the needle had been drawn forward, or to the left of north nearly 4°, and the west variation thereby increased to $29\frac{1}{2}°$; with the head east, it would be drawn to the right of its natural position, and the variation diminished to about 21°; but, at north, the attraction in the ship was in the same line with the magnetic poles of the earth, and would, therefore, produce no change. The same thing took place at south, for the two attractions were still in the same continued line, though on opposite sides of the compass; and throughout the voyage I found, that variations, taken with the head at north and south, agreed very nearly in themselves, and with the observations on shore, near the same place, when such observations were not affected by local attractions.

"But, although the errors were always the same way in the same hemisphere, when the head was at west, and when it was east they were always the contrary, yet the quantities varied with the situation of the ship, being greater in high and less in low latitudes; and yet they did not increase and diminish in proportion to the latitude. After much examination and comparison of the observations, and some thinking on the subject, I found that the errors had a close connexion with the *dip of the needle*. When the north end of the needle had dipped, it was the north point of the compass which had been attracted by the iron in the ship; and, as that dip diminished, so had the attraction, until, at the magnetic equator, where the dipping needle stands horizontal, there seemed to be no attraction. After passing some distance into the southern hemisphere, and the south end of the needle dipped, our observations again showed errors in the compass; but the west variation was now too great when the ship's head was eastward. These errors increased as the dip augmented; and in Bass's Straits, where the south dip is nearly as great as the north dip in the English Channel, the attraction produced almost as much error as when we left England, but it was of an opposite nature. On turning northward again, along the east coast of New South Wales, the dip of the south end of the needle and the attraction of the iron upon the south point of the compass, diminished altogether, as nearly in equal proportions, as the accuracy of our observed variations could be depended on; and I, therefore, considered the connexion between them to be so far certain as to make the dip one *datum* in reducing the observed to the true variations."

The observations of Capt. Flinders were deemed of sufficient importance to induce the Admiralty to institute a series of experiments under his superintendence, but the subject was not as yet so thoroughly appreciated, in all the disastrous consequences which had resulted and were still likely to accrue from the neglect of this element of disturbance, to call for any strenuous exertions being made to determine more fully the nature of the "Deviation of the Compass," and to ascertain the best methods of rectifying the errors.

It would naturally be supposed that, when a doubt was once

thrown on the efficiency of the compass, and that there were likely to arise circumstances which militated against the indications of that instrument being followed with the implicit reliance which had once been given to it, the whole matter would undergo a searching investigation, since the lives of hundreds were daily imperilled until the true value and character of the errors had been elicited; yet nothing further was done until 1817, when Mr. Bain, of the Royal Navy, again called attention to the subject in a small work, in which he gave numerous proofs of the necessity of a strict inquiry into the sources of error.

Capt. Scoresby also, during his voyages to the Greenland seas in 1815 and 1817, was so far impressed with the necessity of closer observation on this point, (being led to the inquiry from his own experience of the anomalies in the direction assumed by the magnetic needle during his service in those high northern latitudes,) that he furnished a paper on the subject, which was published in the *Philosophical Transactions* of 1819, the substance of which is comprised in the following summary:—

1st.—That all iron on board a ship has a tendency to become magnetical; the upper ends of the opposite bars being south, and the lower, north poles in the northern hemisphere, and *vice versâ.*

2nd.—The combined influence of all the iron is concentrated in a focus; the principal south pole of which, being upwards in the northern hemisphere, is situated in general near the middle of the upper deck.

3rd.—This focus of attraction, which appears to be a south pole in *north dip*, attracts the north point of the compass, and produces the *deviation* in the needle.

4th.—This deviation varies with the dip of the needle, the position of the compass, and the direction of the ship's head. It increases and diminishes with the *dip*, and vanishes at the magnetic equator. It is a maximum when the ship's head is west or east, and it is proportional to the sines of the angles between the direction of the ship's head and the magnetic meridian.

5th—.A compass placed on either side of the ship's deck, directly opposite to the *focus*, gives a correct indication on an *east* and *west* course, but is subject to the greatest deviation when the ship's head is north or south.

(To be continued.)

THE MERCHANT SEAMEN.

THERE is a public indifference in regard to the interior economy of the merchant ship, and especially of the forecastle of the trader, truly to be wondered at and much to be regretted, since it affects one of the chief channels for the wealth of a mercantile country,—one of the chief nurseries of that power which makes us "great among the nations." Any interest manifested in this subject has been under the

pressure of immediate difficulties, and so far as it has gone is quite inadequate to bring about the improvement so much to be desired.

Those who take an interest in our merchant seamen, and who may have entered into conversation with commanders and officers, with the view of eliciting their opinions, must have been pained by the dislike or want of sympathy evinced for the men entrusted to their command, and may have been surprised at the low estimation in which they are held.

Quite aware that there is much to create this dislike of the seamen, and unable to deny the low standard of their moral character, there are yet attendant features of ship-board life which, when they are considered, should make us feel that our seamen are on the whole better than could have been expected from our past neglect of them. When the better promptings of a seaman's mind are unceasingly checked by discomforts and overcrowding, and when moral influences, which produce important social evils by accidental contact in common life, are prime and ever-recurring accessories to degrading him in the social scale, it is unjust to form this unfavourable opinion until it is seen that improved conditions do not improve the seaman, as they have other classes of men.

The dislike of our seamen, so universal among merchant officers, and the public indifference to the interests of the former, render this an unpopular subject, but it is the more incumbent in a work addressed to the rising sea youth to endeavour to remove a dislike and indifference which cannot be too much deprecated. In urging attention to the unfavourable position of merchant sailors, I must be permitted to show that I have had personal opportunity of becoming intimately acquainted with their character. Familiar with them on the main deck of a large ship in the former service of the East India Company, an early devotion to the profession induced me to lay to one side the quarter-deck jacket, and to enter a forecastle, where for three years I familiarised myself with the practical life of a sailor by handling his work. This experience was not confined to one ship, or one set of men, but embraced three distinct voyages, and three different crews, and in the course of acquiring it I saw so much to attach me to the sailor, both in his character and capability for an improvement superior to his opportunities, that no annoyance, since occasioned by his misconduct, has removed the favourable impression.

Notwithstanding the competition of rates of freight and passage, much has been done to improve the accommodation of seamen by the good feeling of shipowners, and somewhat, though not as much as might be expected, by the clauses in the late law for the improvement of mercantile discipline. Nevertheless, it is important yet to make great amelioration in the accommodation provided for the labouring occupants of a merchant ship; for when it is considered that this is the home-life of men who have to do the brunt of the work, and that the home of the working man should be a rest from his labour, the short periods which the sailor has below should be both a relaxation and an enjoyment to him. The forecastle should, therefore, at least contain provision for a clean dry bed, a comfortable well set out meal,

with space, light, and ventilation; and these, it will be candidly admitted, are in theory the minimum conditions for comfort. The crowding up of this space, as is generally the case, by filthy bunks, or still more filthy hammocks, occupied by discontented idleness, under the baneful system of watch and watch, makes it a place whence the fair sisters, Godliness and Cleanliness, have withdrawn shuddering.

The watches below at night should be undisturbed if possible, the forenoon watch being reserved whenever practicable for the use of the sailor; clean hammocks in our large ships should be issued each month, and piped up at seven bells each morning, all hands from noon till clear up hour being employed on deck. Such a system would be beneficial to the men and advantageous to the ship, and efficient work might then with justice be required of a well housed and well paid crew.

At sea our men are neither housed nor worked sufficiently, and on shore they are supposed to be destitute of human affections. The national philanthropy, which has distributed whole cargoes of bibles to the heathen, and sent its missions wherever endurance, courage, and piety can penetrate, which has expended millions on the slave, has yet impressed our merchant seaman, bundled him on board ship, at half his usual wages, to face the hardships of a life of increased danger, and in the eleventh hour has repaid him with the

"SAILOR'S HOME."

Admirable satire on the home of an Englishman—on the country of love, law, and effective religion! The seaman released from the privations, perils, subordination, and confinement of his voyage, is encouraged to turn from the dissolute streets by the attractions of a house of order and discipline—a house full of men—an orderly repetition of the whisker to whisker society he has just been surfeited with. As a sailor's lodging-house it is useful, but do not mock it with the holy term of *home*. Encourage the sailor to have a true home to look to, with domestic ties to draw him to it, and you will make him a better man and a far more efficient seaman.

It will be readily conceded that while there is a market for labour at home and in the colonies, the sea, with its peculiar drawbacks, will not be in much favour. There is one stereotyped answer to the query of how it is liked, that "to break stones is better." Ask any small shopkeeper with a fair business what he thinks of it, and he would answer that his son would be ruining his prospects, if not degrading himself, by going to sea; and, as education increases, so will this dislike increase. There is no inducement on the part of well-bred men to enter the Merchant Service even as officers, for it involves a loss of caste, exposes them to battle with an imperfect discipline, and after all to receive inadequate pay for their duties and responsibilities; neither is there any inducement on the part of the labourer, for he is subjected to great discomforts and privations, separating him from those ties which make life valuable.

The glowing expressions of "British hearts," &c. in the press,

will not man our merchant ships, and if the merchant ships do not train seamen, they will not be forthcoming when wanted by the Royal Navy. Hearth and love and home are realised by the sailor's countrymen on shore, but seamen, as a body, know nothing of such blessings, and no class of men require them more. The risks of a sailor's life put insurance beyond his average wages, and marriage being thus scarcely practicable, the custom has become almost universal to seek the embrace of the poor girl, who, although she may pilfer and waste his means, has yet some regard for her victim, and bestows more care and gentleness than she gets credit for.

As the merchant commander considers himself twice manned when he has a crew of married seamen, so the country might find it advantageous to offer inducements for a profitable investment of wages, in order to promote an increase of her sea population, and at the same time lessen the appalling vagabondism and prostitution which nest about and encircle our docks. The child follows the sire, and if the sire returned to a respectable home to be refitted and cheered after his voyage, the youth would become a seaman of good quality and a man of character. If public money could be voted so as to lead to this improvement, it might add much to our national defences, and in a way perhaps not the least important. A country encircled with sea villages, the homes of a moral seafaring population, would have a true bulwark of British defenders. Can our legislators not devise some plan by which providence might be encouraged among our seamen, for insurance under the present system is almost impossible, and marriages therefore cannot be frequent?—*Capt. Methven's "Log of a Merchant Officer."*

MARINE INSURANCE AND WRECKS, (AMERICAN.)

A SPECIAL meeting of the Boston Board of Underwriters was held in May for the purpose of making some modifications in the rates of marine insurance, on which occasion a committee was appointed to take the tariff of rates into consideration, and it was also recommended to insert a war clause in all future marine policies. The *New York Express* remarks that "the unparalleled losses sustained by marine insurances during the last twelve months render it necessary for those engaged in underwriting to discriminate more nicely in the risks. There have been doubts expressed as to the safety of clipper ships over those of full build, and it is stated that the superior material formerly used in the construction of ships is not now obtained. There have been during a year past such losses of life and amounts of property sunk, that an investigation should be entered into, to see if there are other causes, than the usual gales, which produced these unfortunate results."

In order to remedy one of the evils from which casualties frequently arise, the Board of Underwriters in New York have given notice that it is not their intention to grant policies of insurance on any vessel or its freight, unless such vessel is guarranteed not to carry grain in bulk.

The *Whaleman's New Bedford Shipping List* gives the following account of the losses of the past year:—

"During a period of eighteen months, ending in September, 1853, 103 ships and barques, 144 brigs, and 327 schooners and sloops, were lost at sea; 50 vessels, which had previously sailed, were never afterwards heard from, 838 put into port in distress, and 102 wrecks were passed; making a total loss, for the period given, as calculated by a writer in the *Boston Atlas*, of one vessel lost every eleven hours, one stranded every forty-four hours, one abandoned every seventy-five hours, and one sailing and never afterwards heard from every ten days. Such a statement as this should awaken earnest inquiry concerning the causes of these disasters. The calculation is almost exclusively confined to American shipping. Few can read it unmoved, and yet, if the loss of life as well as of property had been included, and if the dreadful sufferings of the dead and bereaved could be set forth, the horrors of the picture would be infinitely increased.

"Some inquiry ought to be made into the causes of these disasters. They must be due to some cause sufficiently general to be detected, and sufficiently definite to be susceptible of a remedy. Shipowners are too often satisfied if they can effect and recover heavy insurances on their losses, and are apt to dismiss the matter as the result entirely of accidents over which they have no control. A writer in the *Philadelphia Bulletin* suggests the following as among the causes to which these disasters are mainly due:—

"1. The unfitness of the vessels themselves. Some vessels are sent to sea unsound in timber and planking, with crippled spars, rotten and worn rigging, thin and strained canvass—sent, too, at the most inclement season, to the most stormy latitudes, overloaded with a dangerous and racking cargo. What follows? A gale springs up, the crippled spars fall, the worn canvass blows away, the labouring hull, shorn of all support, leaks—the helpless wreck founders and drifts on shore, and the sea buries all.

"2. Vessels, beside being unseaworthy and overloaded, are entrusted ofttimes to the most incompetent and careless masters. An owner, anxious to dispatch his vessel for a good market, looks around for some one to take charge of her. The first person who offers, perhaps, is appointed from necessity. His certificates as to character and fitness (if he has any) are doubtful and insufficient. The owner relies for his security on the insurance-office, and the insurance-office on chance. A very safe reliance for general results, but fatally treacherous in detail. The crew and passengers must rely upon the master and the vessel. They go to sea; the master proves to be neither sailor or navigator; unfit, too, to command his crew—especially now when the former and long-established system of discipline has been abolished, and the officers of vessels must rely chiefly on the moral power which good character and professional skill combined alone can inspire. Mutiny and insubordination ensue. Bad weather comes on—the crew refuse duty—they neither respect his character nor confide in the master's knowledge. Spars and canvass go—the reckoning is wrong, and the end of course is the loss of the vessel, and, perhaps, of every soul on board.

"3. WEAKNESS AND INEFFICIENCY OF CREWS.—Our merchant vessels are all under-manned, and besides are supplied in most cases with a large proportion of men who are sailors only in name. The master knows nothing about his crew till he gets to sea. They are not shipped by himself. They are subject to no examination. The owners probably never see them. The insurance agent is equally ignorant about them. The landlords who collect and put them on board are the only persons who do know anything about them, and they are directly interested in concealing the truth in precisely those cases where it is most important that it should not be concealed, viz., when the men are worthless.

"4. Our merchant vessels are not generally supplied with the requisite appliance for safe navigation, viz., instruments, books, and charts. With the exception of the first-class ships employed in distant voyages, (and not all of them), but one chronometer is on board, and that the master is required to provide. Where the owners are liberal, the ship furnishes one and the master another. Among the coasting vessels a chronometer and its use are both unknown. The result is, that the large proportion of American merchantmen are destitute of the means requisite for safe navigation. One chronometer is not enough; in some respects worse than none.

"Here is groundwork for an investigation, and every vessel and crew should be subject to it before leaving our harbour. After a vessel is lost it is too late to commence an inquiry. An examination in advance of sailing, if properly conducted, might reveal defects in some of the particulars named in season for a remedy to be applied."

HONORARY REWARDS.

CAPT. B. ROBERTSON, of the ship *Varoon*, of Aberdeen, has been presented with a gold medal by the Emperor of the French, as a reward for gallant and meritorious services performed in rescuing the crew of the French lugger *Pekin*, of Nantes, on the 31st of December last.

Messrs. Thompson and Nephew intend presenting to CAPT. RAYMOND CORNISH, of the ship *Mohongo*, of Londonderry, an elegant silver trumpet, suitably inscribed, as a slight acknowledgment of his noble conduct in rescuing Capt. Macoduck and the crew from the wreck of the ship *Argo*, on the 19th April last. A heavy sea was running at the time, and CAPT. CORNISH effected the rescue, at imminent hazard, by his small boats.—*New York Courier.*

Her Majesty's Government have awarded to CAPT. F. DI DIEGO, of the Sicilian brig *Diligente*, a gold medal, for having saved the master and crew of the ship *Alyoma*, of St. John, (N.B.,) and for his humane behaviour to them when on board his ship while conveying them to Gibraltar.

LEGAL DECISIONS.

CITY SHERIFF'S COURT.—*Non-Liability under a Bill of Lading where Weights and Contents are described as Unknown.—The Leith* (s).—BRIDREGOS *v.* GENERAL STEAM NAVIGATION COMPANY.—(Before Mr. R. Gurney, Q.C.)—This plaint was brought to recover 12*s*., the value of goods which were missed from a case of merchandise which had been shipped at Hamburg in the Leith (s) for London. The plaintiff said that when he received the case, it had been apparently forced open, and two pounds of wire, of the value of 12*s*., missing from the contents. He added that the lighterman and the custom-house officer could prove that it was in that state when received from the vessel.—The plaintiff produced a letter from the Company in answer to one which he had sent requesting compensation, which stated that the case left the steamer in the same condition in which it was received, and therefore the Directors could do nothing in the matter.—The Judge: But what did it contain when it was shipped? can you show me how it was shipped? where is the bill of lading?—Plaintiff said he had not got it.—Mr. Winkworth, who appeared for the Company, said he would produce a copy. In the margin it would be observed, "weight and contents unknown." It was not the first time he had had to resist a claim of the kind. According to a well-known authority, case "Haddon *v.* Parry," in Taunton's Reports, it was quite clear that where the weights and contents were described unknown in the bill of lading, a party for loss could not recover. If allowed, it would afford, as stated by the Court, a strong temptation to fraud.—Judge (to plaintiff): You must show me that the goods for which you claim were put on board.—Plaintiff said that the bill of lading specified that they should be in good order and well-conditioned. There was ample proof that the case was broken open.—Judge: That may or may not be; but you don't sue for the damage done to the case, but, in another way, for the loss of goods.—The plaintiff assured the Court that he had lost them.—Judge: How do you show me that they even were shipped at Hamburg?—Plaintiff pointed to the bill of lading.—Judge: That is no proof of what goods were put on board. You must show me that what you claim for was delivered to the defendants or their agents at Hamburg. Plaintiff again adverted to the broken box.—The judge said that was no evidence of the loss of the goods. The plaintiff must be nonsuited.—The defendants, who had also the Custom-house officer in attendance, were allowed costs.

COURT OF QUEEN'S BENCH.—*Breach of Contract.*—BAYLEY *v.* AVERY.—Mr. Justice Coleridge delivered judgment. It was an action for a breach of contract respecting the delivery of a cargo of timber. By the terms of the contract the defendant was to deliver the timber at the port of Plymouth, and the alleged breach consisted in the defendant failing to deliver it at that port. The defendant pleaded that he was to be at liberty, according to the terms of the contract, to deliver either at the port of Falmouth or Plymouth; and, in support of that plea, he relied upon one of his letters, setting out that condition. The plaintiff admitted the tender as to deliver at either of those ports; but pleaded that he declined the tender as to either port, and purchased the cargo of timber on condition that the defendant should deliver it at the port of Plymouth. Further correspondence followed, and the defendant contended that the negociation ended in his being at liberty to deliver the timber at any convenient port. The learned judge now said that he was of opnion that the plaintiff was right in his construction of the letters, that the timber was to be delivered at the port of Plymouth. He was a Plymouth merchant, and it was of importance to him that the delivery should be at that port. That influenced his (Mr. Justice Coleridge's) judgment, and it was also the opinion of Mr. Justice Erle; but their brother Crompton was of a different opinion.—Judgment for the plaintiff accordingly.

ILFORD PETTY SESSIONS.—*Prosecution by the Board of Trade.*—James Young, landlord of the Coach and Horses, Woolwich, was summoned by Mr. Coleman, clerk to the Registrar of Seamen, by order of the Board of Trade, under the 3rd section of the Merchant Seaman's Protection Act, for having hired,

engaged, and supplied seamen, not being duly licensed by the Board. Mr. Pelham appeared for the prosecution.—Augustus Green, a seaman, residing at Barking, stated that he was in the skittle-ground of the Ship public-house, at Barking, on the 22nd of April, when the defendant came into the ground and asked the men there whether any of us wanted a ship? Some said "Yes," and he went into the parlour and we all followed him. Defendant sat at the table with a paper before him; he said he was sent over to get ten hands for the *Victoria* steam-vessel, bound to Constantinople, then lying at Woolwich. She was to go away the next morning at six o'clock. The wages were to be £3 15*s*., and one month's advance, to be paid, he said, three months after leaving the Land's End, and he said he would cash them for them. Some of the men asked if he wanted their discharges, and he said "No, they are of no use." He took down all our names, and told us to go home and get our clothes, and he would hire a horse and cart and take them down. When he returned with the horse and cart he loaded it with the clothes, and while so doing some boys came up to defendant and told him he had two of Mr. Ship's apprentices, and he replied, "They will be all right." Seven of us left to go to the *Victoria*, and, walking with the defendant, when near the Anchor corner, some man who passed us on the other side of the road, called out, "There goes two of Ship's apprentices." I then heard one of the two boys say to him, "We are apprentices, we have been six years at sea. Do you think we shall get shipped?" Defendant answered, "Yes; no doubt of that. You need not tell them you are apprentices; when you get on board they will know nothing of that. Mr. Ship can do nothing to you if you once get on board." We walked with defendant to the boat, and he told the waterman to row us to the *Victoria*. We went on board, and the defendant went with us. I saw him go to the Captain, and he returned, and told us to go into the engine-room, out of the wet, and when the Captain had finished his dinner he would see us. Defendant then showed us round the ship, and then took us to the Captain, in the cabin, on deck. Defendant stood at the door, and called over the names one by one. I signed the articles for £3 15*s*. per month. I was then going on shore for my clothes, when some man would not let me go. I went to defendant, and told him I wanted my clothes from home. Defendant said, "There is the Jew, why not buy the things you want of him." Told him I had plenty at home. The Captain then consented to my joining at Greenhithe on Sunday morning, at half-past five o'clock, and gave me a pass to go on shore. On Sunday morning I heard she was at the Gunfoot Light Boat, below Sheerness, so I knew it was no use my going; but for defendant's introduction I should not have gone near the ship. Edmund Pyner having confirmed the foregoing, Mr. Griffin, who appeared for the defendant, argued that the Act of Parliament had not been infringed; that the *Victoria* (s) was not a merchant ship, having been taken up by the crown for the conveyance of troops to the Mediterranean, and also that there was a great scarcity of hands, and that the defendant had been employed by the chief mate to procure men in lieu of those who at the last moment had deserted, and he was surprised to find such a prosecution had received the sanction of the Board of Trade. The bench retired to consider their decision. On their return, the chairman said they had carefully considered the points argued by defendant's solicitor, and they were of opinion that the vessel came within the meaning of the Act; and, although there might have been a scarcity of hands, there was a proper and improper mode of obtaining them. It had been shown that hands could have been obtained at the government office; but, taking into consideration that the defendant did not appear to have received any remuneration, the court mitigated the fine to 20*s*., and the costs of the seven summonses in the other cases, which would be abandoned.

SOUTHAMPTON COUNTY COURT.—*Liabilities of Shipowners.—Ship City of Manchester.*—BROOKS *v.* BROOK AND WORTHINGTON.—(Before C. J. Gale, Esq.) In this case, the plaintiff, a clothier and outfitter, sued the defendants, as the Owners of the *City of Manchester*, for a sum of money for clothing, &c., supplied to some of the seamen of the vessel, on the strength of a written guarantee given by the Captain for payment. His Honor, having taken time to consider his decision, gave the following judgment:—"This was an action to recover the sum of £27 from

the Owners of the ship *City of Manchester* for clothing supplied to the seamen. It appeared that the Captain gave a written authority to the men to get clothing from any outfitter to the amount of 30*s*. each, undertaking to pay that sum on the certificate of the chief officer being given that the clothing was duly shipped on board. Under his authority the plaintiff supplied clothing. It was proved that a quantity of the value of £25 19*s*. had been put on board. The Captain complained that the men had been supplied on shore with money and goods convertible into money, which had enabled the men to get intoxicated, and induced them to neglect their duty, so that the vessel was prevented from sailing. Thereupon the plaintiff offered to take back the goods then on board, and abandon his demand altogether. This the Captain refused to permit, and he afterwards distributed the clothing to the men. The Captain might then have repudiated his liability altogether, but as he retained the goods I think the plaintiff was clearly entitled to recover the price of them, though no certificate was given. The tradesman could not do more than offer to take the goods back. The next question is, whether the Owners of the ship were liable on this contract made by the Captain. If the transaction had taken place in a foreign port, there could have been no doubt of his authority to bind the Owners, but in a home port he has not so extensive an authority, because it is said that the Owners, or their shipping agent, may be communicated with. On investigation of the facts in this case, however, not only was there some evidence that one of the defendants knew of the order being given to the plaintiff, but his agent, it was clearly proved, knew of it also, and was actually on board when the Captain refused to allow the plaintiff to have the goods back, and the agent took no step whatever to repudiate the liability of the defendants. This latter fact, I think, is quite conclusive. The plaintiff must, therefore, have judgment for £25 19*s*. I should observe that it was incidentally proved that there was a practice on the part of the shipping agent to take a commission from the tradesman who supplied the goods to the ship; of course, if the Owners know of the practice, they cannot complain; otherwise it would be clearly a fraud upon them. I wish to add that there was no doubt on the facts of the case, and, therefore, if the defendants are dissatisfied, it is open to them to appeal."

Bristol County Court.—*Liability of Shipmasters for Brokers' Charges.* Grant *v.* Czar.—This was an action to recover the sum of £3 3*s*., being the amount which the plaintiff claimed as a shipping broker for fees to which he would have been entitled for reporting, &c., the ship *Oriente*, of which the defendant was master.

It appeared from the opening statement that the *Oriente* arrived in the port of Bristol on the 1st of May, upon a voyage from Venice, with grain. The charter-party was made abroad, between the Captain and a merchant named Ivannich, to carry a cargo of corn to England, calling at Cork or Falmouth for orders; and a clause in it directed the ship and cargo to go to the recommendation of the receiver of the cargo (a merchant named Baker), but free of any commission. Mr. Grant, the plaintiff, being the broker of Mr. Baker, that gentleman placed the charter-party in his hands, with directions to do what was necessary. Mr. Grant accordingly kept a look-out for the arrival of the vessel, and upon her coming into port, his clerk boarded her, and required the master, Czar, to give him his papers, for the purpose of reporting her at the Customs. The master had a gentleman named Reed on board, who was also a broker, and he refused Mr. Grant's services. Mr. Grant then demanded his fee, and, as it was refused, the present action was brought to recover it. Mr. Brittan stated that he was instructed that, by the custom, the charter-party being addressed to the recommendation of the consignee of the cargo, the ship's master had no voice in the matter, and was bound to accept the consignee's broker. There were abundant cases to show that, in cases where a broker's services were the means of bringing parties together, he was entitled to recover his brokerage, notwithstanding that some other broker was employed and did the work. The learned gentleman cited Burnett *v.* Bough, 9 Car. and Payne, 204; Brown *v.* Birch, 9 Car. and Payne, 620; Smith *v.* Boulcher, 1 Car. and Kirwan; Hill *v.* Kitching, 3 Manning; Granger *v.* Scott.

Mr. Smith said all the cases which Mr. Brittan had cited would be found to apply to instances in which the broker had been originally employed by the parties. He did not know that it was material, but his translation of the clause in the charter-party was that the vessel was to be recommended or addressed to the receiver of the cargo.

Mr. Brittan would not object to receive this translation, but said the custom of the port was as follows:—Where a vessel came to a merchant, without the clause in the charter-party, "free of any commission," he had a right to deduct 2½ per cent. from the freight, but there was a distinction between freight and brokerage. Some effect must be given to the clause in the charter-party, and if it did not mean that the merchant must do the business, what did it mean?

Mr. Smith submitted that the plaintiff was out of court. The action was brought for breach of contract. Now, there was no contract whatever between the plaintiff and Captain Czar.—His Honor: Why does the Captain sign the charter-party?—Mr. Smith said the Captain had signed it, but there was no mention in it whatever of Mr. Grant, the plaintiff.—His Honor was aware that no one could sue as consignee of a bill of lading; it must be upon a new contract, arising out of the bill of lading. There was no contract at all between the defendant and Mr. Grant.—His Honor said, if Mr. Smith's argument was good, Mr. Grant would have no remedy whatever, as he was no party to the contract.—Mr. Smith: He is not at all referred to. Mr. Baker is the receiver of the cargo. If any one employed him, it was Mr. Baker.

Mr. Brittan said, although Mr. Grant had not signed the contract, yet he was the agent of the receiver of the cargo, who was specifically referred to in the charter-party. There was a recent decision, in which a party in this country, interested in a contract which was made in the East Indies, but not being a party to that contract, was permitted to sue upon it.

His Honor said, it certainly seemed that Mr. Baker was the party to whom the plaintiff ought to have looked. Should it not rather be an action on the case against the defendant for preventing the plaintiff from doing work which ought to be done by him under the charter-party?

Mr. Brittan said the particulars would admit of the action being so shaped. He should show that by the custom of the port, the broker had no one to look to but the Captain. Supposing that he had remained passive, and had neither resisted nor directed Mr. Grant, would not the broker have been entitled to sue?

His Honor said he would prefer hearing the case out, and then he would give his decision on all the points.

Frederick Wardell, plaintiff's clerk, proved having received the charter-party from Mr. Baker, jun., a son of the consignee of the cargo. Went on board and tendered his services, but the Captain, through Mr. Reed, declined them.

Mr. G. Grant, the plaintiff, was examined as to the custom of the port. He said, where a charter-party stated that the vessel was consigned to the merchant or consignee of the cargo with commission, the merchant collected the cargo, and charged a commission of 2½ per cent. If he chose voluntarily to report the ship for the master without charge, he did so; but, if he refused, the Captain had to pay his own broker. If, by the charter-party, the ship was directed as in the present instance to the recommendation or address of the receiver of the cargo, the Captain was bound to employ the broker nominated by the consignee, and had no discretion in the matter. The witness was cross-examined at some length, but in substance adhered to that explanation of the custom of the port which, he said, was the same as in the port of London.—By the Court: The broker cannot report the ship unless the Captain produces his papers to him: when the broker goes with the authority of the receiver, the Captain has no discretion. The broker invariably looks to the Captain for payment of his fees. The Captain is bound to produce his papers whether he likes it or not.—Mr. Smith: And, I suppose, whether the broker understands Italian or not.—In reply to further questions by the Court, the plaintiff said it was not necessary to have much knowledge of the language in a first interview with a Captain, because all that was required was to get his ship's papers, which the broker would very well understand. After that, it was the custom with the brokers to get an interpreter, of which there were several in the port. It is very frequently the case that the broker does not understand the language.

His Honor said that as the case turned upon the custom of merchants, and the right of the Captain to refuse a broker when appointed by the consignee of the cargo, he should like to hear some further evidence.

Mr. Mark Whitwell was then called, and deposed that he had been a broker for twenty-one years, before which time he was master of a vessel. Mr. Whitwell differed from Mr. Grant as to the custom of the port, and considered that the master had a decided right to refuse the broker named by the consignee of the cargo. The Captain where he employed the broker, paid him; but he should say, that if by the charter-party the ship was addressed to the consignee of the cargo, the consignee was bound to employ a broker and pay him. A judicious shipmaster would employ a respectable broker to protect himself. Where the merchant was paid his 2½ per cent. commission, he was bound to do the ship's work.

Mr. Brittan said, after that evidence of the custom by Mr. Whitwell, he did not think that he ought to carry the case any further.

Mr. Smith said his long experience of mercantile cases had taught him, as he thought it must have taught his learned friend, that the custom was as laid down by Mr. Whitwell. There was no contract whatever between the Captain and Mr. Grant by which the former could be responsible for the fees.

Mr. Brittan: I must submit to a nonsuit.

Mr. Smith then applied to his Honor for his costs of the proceedings. The Captain had been put to the expense of employing a master to take his vessel down to Cardiff.

His Honor said it did not strike him that it was a case for costs, and each party must, therefore, bear his own expenses.

Sunderland Police Court:—*Royal Navy v. Merchant Navy.*—Hugh Sullivan, a young lad about nineteen years of age, was charged with deserting from the *Elbe*, of Sunderland. Sullivan had signed articles on the 7th June to proceed, as ordinary seaman, on a voyage to Newhaven, in the United States, and received part of his wages in advance. According to the wording of the articles, he agreed to join the *Elbe* on the following day, June 8th, but no hour was specified in the articles, although after the names of others of the crew, (who had shipped at London) the hour of the day at which they were to be on board was put down. The Captain, however, obtained a verbal promise from him, that he would be on board on the morning of the 8th, but the forenoon passed away without his having made his appearance. Mr. G. W. Hudson, Owner of the *Elbe*, then went up to the shipping office, about two o'clock, to enquire after him, and there he learned that he had entered Her Majesty's service. On ascertaining this, he drew up an order for Sullivan's apprehension, and put it into the hands of the constable belonging to the shipping office. When that officer found Sullivan, the latter informed him that he had entered the navy, but he produced no document to prove this until they were before the Owner, when he laid before them a paper signed by Mr. Hemsley, of the Naval Rendezvous, stating that he belonged to the navy, and this was read by Mr. Hudson. Shortly after, Sullivan was removed, and locked up in the station-house.—Mr. A. J. Moore, who appeared for Mr. Hemsley, said Mr. Hudson had committed a grave offence in arresting Sullivan after he had entered Her Majesty's service. If such proceedings were allowed to go on, the fleets would never get manned, and in this case the lad had done everything in accordance with the law, for by the 50th section of the Merchant Seamen's Act, it was provided that any seaman wishing to enter Her Majesty's service could do so without being liable to the charge of desertion, even although he left the employment of an Owner in the Merchant Service. Mr. Hudson had clearly been guilty of false imprisonment, but most probably the course which he had adopted was the result of ignorance as to the manner in which he ought to have proceeded. He had committed an illegal act, however, and there was no doubt but that he would yet have to make his peace for it elsewhere. After Mr. Moore addressed the bench, the clerk (Mr. Kidson) requested a sight of the log, from which it appeared that no entry had been made, at the proper time, of Sullivan's reputed desertion; and then it was

submitted by Mr. Moore and the clerk also, that there really had been no grounds for Sullivan being treated as a deserter. "If the lad," said Mr. Kidson, "had gone on board the *Elbe*, on the evening of the 8th, at fifty-nine minutes and three-quarters past eleven o'clock, he would have fulfilled his contract according to the articles which he signed: there was really no desertion in the case." Mr. Simpson: "If a man leaves his vessel for two or three days, and then goes and joins the navy to save him from the consequences, is that desertion?" The Clerk: "That depends on whether or not the man left with the intention of deserting. If he comes ashore with the intention of leaving the vessel altogether, that is desertion; but desertion and absence from duty are two different things." Mr. Hudson, in noticing Mr. Moore's remarks, said his object in having Sulllivan apprehended was to bring the matter before the public. Here was a man who got his wages, performed no duty, but made off, entered the navy, and when he wished to send him to his ship out came the excuse, "I have entered Her Majesty's service." He considered it a case of great hardship. Sullivan was then discharged.

Hull Police.—*Sea Apprentices.*—Mr. R. Holmes, master of a vessel, was sued by a young man named Stannatt for wages alleged to be due. The facts elicited showed that great care should be taken in the preparing of indentures. It appeared that the complainant was apprenticed to the defendant, when in London, a short time ago; but the indentures had not been registered, and the complainant applied for an ordinary seaman's wages. Mr. C. E. Ayre, who appeared for the complainant, said he understood the defence would be that the complainant was an apprentice; but he should be able to prove that he was not. The indentures were then produced, and it appeared that they had not been registered. Mr. Ayre drew attention to the 40th section of the Merchant Seamen's Act, which directs that the indentures shall be registered, and he also referred to the 42nd section of the Act, which imposes a penalty upon those neglecting to do so. He stated that the indentures should be registered before the vessel leaves the port. The defendant said that the indentures were registered in London.—Mr. Ayre said the register must appear on the face of the indenture, and that the apprentice should be taken to the Custom-house.—The complainant, in answer to questions which were put to him, stated that he was not taken to any register-office, nor to the Custom-house. Ordinary seamen's wages were £2 5*s*. a month. He was eighteen years of age.—The defendant intimated that the complainant was of very little use on board of the vessel, and that he had never thought of paying him ordinary seamen's wages, especially as he considered he was an apprentice. He expected the indenture had been properly registered.—The magistrates ordered the complainant to pay £4, which the latter appeared willing to do, on being told that he would get rid of the defendant.

Sidney Water Police, *Feb.* 3.—*Ship Waterwitch.*—Thomas Genyther, steward of the *Waterwitch*, complained of an assault committed by Thomas Adams, Captain of the ship. From the evidence of the complainant it appeared that, on the 1st of February, while the vessel was discharging, the Captain ordered him to scrub out the second mate's cabin; this he refused to do, urging that it was not part of his duty. The Captain then called him a scoundrel, which he retorted; whereupon the Captain knocked him against the cabin door, seized hold of him by the neck, and gave him several hard blows on the face, which produced blood. Two seamen were called as witnesses, who deposed to seeing the face and neck of the prosecutor bleeding, but did not see the alleged assault. On behalf of the defence, the chief mate stated that the prosecutor had used abusive language towards the Captain; he only saw the Captain push him; it was in every ship the duty of the steward to clean the officers' cabin.—After a lengthened cross-examination, the bench gave their opinion that an assault had been committed, but that it had been provoked by the insulting language of the complainant; considering this, the smallest penalty would be sufficient, and the defendant must, therefore, pay the sum of one shilling, with 4*s*. 6*d*. costs.

United States Admiralty Court, Philadelphia. — *Sea Wages.* — Saunders and Others, *v. British Brig Victoria.*—(Before Judge Kane, May 2.) Present: C. M. Neal, Esq., for libellants; Benjamin Rush, Esq., solicitor for the British consulate, for respondents; also, G. B. Mathew, Esq., British Consul. This was a libel for wages, on the ground of an alleged deviation in the voyage.

Before proceeding to the merits of this case, respondent's proctor entered a plea to the jurisdiction, the controversy being between British subjects belonging to a British vessel, arising out of a contract entered into in a British port, to be terminated in a British port, and in point of fact not yet terminated. The plea was overruled.

Respondent's proctor then cited Lynch *v.* Crowder, before Judge Betts, October, 1849, 12 Law Rep. 355, and Patch *v.* Marshall, before Judge Curtis, October, 1853, Curtis 452, and asked leave on behalf of the British Consul to enter the written dissent of the latter to the proceeding, observing that while the Consul entertained the highest respect for this tribunal of the United States, he was nevertheless responsible to his Sovereign and her government for a proper attention to any matter occurring between British subjects, in regard to which his official duty required him to intervene. He would feel, therefore, that he was derelict to his duty not to state the reasons which governed his conduct in this instance. The court having granted leave, Mr. Rush then read the following paper, signed by Mr. Mathew:—

"To the Hon. John K. Kane, Judge of the District Court of the United States, in and for the Eastern District of Pennsylvania.

"Saunders et al. *v.* The British brig *Victoria.*—In Admiralty.

"In the above suit, instituted in this honourable court by three of the crew of a British vessel, against said vessel and her Master, on a claim for wages, the undersigned, her Britannic Majesty's Consul for Pennsylvania, residing at Philadelphia, begs leave respectfully to enter this his dissent to the crew being permitted to sue in a court of the United States.

"First. Because the brig *Victoria,* on board of which the libellants and respondent sailed, is a British vessel, and the respondent, her Commander, a British subject.

"Second. Because an investigation of the cause of suit would call in question official acts and conduct of a British functionary, in regard to British subjects, which the undersigned has already disposed of to the best of his judgment; respecting which he is responsible only to his own government; and, with regard to men, masters, and sailors, all residents at Nassau, where there is, as in all British colonies, an adequate court of appeal.

"*May 1st,* 1854. "George B. Mathew, Consul."

Whereupon the Court referred the counsel to the cases of the "St. Oloff," in 2 Pet. Adm. Dec., p. 486, and "the Golabehick," in 1 W. Rob., p. 143, as illustrating the law of the Admiralty jurisdiction in the cases of foreign vessels; but upon a view of the admissions contained in the libel, that the contract of shipment, if violated at all by the respondent, had been so violated at a time when recourse might have been had before a British tribunal, and that the parties are about to pass within a British jurisdiction again, and might therefore have recourse to the tribunals of their own country within a reasonable time, and without loss of proofs, concurred with her Britannic Majesty's Consul in the views expressed by him, and thereupon made the following order:—

And now, 2nd May, 1854, it appearing to the Court that 'the vessel is a British vessel, and the seamen British subjects, and that she is now about to sail to a British port, where redress may be had by the libellants, if entitled thereto; it is, upon the dissent of the British Consul to further proceedings being had in this Court, said dissent being now filed, ordered that this libel be dismissed.

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from May 30 to June 29, 1854.

Wreck on the Barrows.—A Green Buoy, marked with the word "Wreck," has been placed 30 fathoms N.W. of a brig sunk on the flat of the Barrows Sand.

The buoy lies in four fathoms at low water spring tides, with the following compass bearings, viz.:—

Swin Middle Light-vessel	N. ¾ E.
Maplin Lighthouse	W. by S. ½ S.

Tralee Bay Lighthouse, West Coast of Ireland.—A Lighthouse has been erected on the Western Samphire Island, in Tralee Bay, county Kerry, from which a Light will be exhibited on the evening of the 1st day of July, 1854, and which thenceforth will be lighted during every night from sunset to sunrise.

The Lighthouse is erected on the small or outer Samphire Island, at north side of the channel of Tralee Harbour, in lat. 52° 16′ 19″ N., and long. 9° 53′ 14″ W. bearing

From Mucklaghmore Rock ...	S. ½ W.	distant	4½	nautical miles.
,, Rocky Shoal, eastward of Mucklabeg ...	S. by E. ¼ E.	,,	5¾	ditto.
,, Mucklabeg Rock ...	S.S.E.	,,	5½	ditto.
,, Samphire Island, larger, south point	N.W. ¼ W.	,,	½	ditto.
,, Black Rock, north side of inner channel ...	N.W.byW.¼W.		2½	ditto.

The Light will be a fixed Light, shown of its natural colour, a bright Light from E. by S. ¾ S. to W.N.W., and coloured red seaward from W.N.W. to N. ¼ E. Its focal point is 56 feet above the level of the sea, at the high water of spring tides; and, in clear weather, it will be seen at the distance of about nine miles.

The Tower is circular, of blue stone, and having around it buildings of lower height. Towards the harbour the Light will be shown to the northern limits of the anchorage, within the larger Samphire Island, and kept open to seaward, it will lead clear of the Mucklaghmore Rock.

Bearings stated are magnetic. Var. 29° 15′ W.

Devaar Lighthouse, Scotland.—A Lighthouse has been built upon the island of Devaar, at the entrance to the Bay of Campbeltown, in the county of Argyll, the Light of which will be exhibited on the night of July 10, 1854, and every night thereafter, from the going away of daylight in the evening till the return of daylight in the morning.

The Lighthouse is in N. lat. 55° 25′ 45″, and W. long. 5° 32′ 16″.

The Devaar Light will be a Revolving Light, which shows a bright White Light once every half-minute.

The Light is 120 feet above the level of high water of ordinary spring tides, and may be seen at the distance of about 15 nautical miles; to a nearer observer, in favourable circumstances, the Light will not wholly disappear between the intervals of greatest brightness. The arc illuminated by this Light extends from about S. ¼ E., by compass, to about W. by N., and faces northwards.

River Dee.—A spit of sand having grown out from the S.W. part of Salisbury Middle Bank in the river Dee:—

A Black Buoy marked "S.W. Salisbury" has been placed at the extremity of the said spit in three fathoms at low water spring tide, with the following marks and compass bearings, viz.:—

Grange Beacon, a ship's length open to the north of West Kirby Church	E. by S.
The Old Light House, Point of Air ...	N.W. by ½ W.
Salisbury Middle Buoy	N. ½ E.
S.E. Air Buoy	N.N.W.
Salisbury Swatchway Buoy	S. by E.
Mostyn Gut Buoy	South.

Electric Telegraph Cable across the Frith of Forth.—The Commissioners of Northern Lighthouses have granted permission to the Electric Telegraph Company to moor, on the line of their Submarine Telegraph Cable, between Granton and Burntisland, on the Frith of Forth, five Green Buoys, having the words "Electric Telegraph" marked upon them in white letters.

Masters of vessels and pilots are requested to take notice that the object of these buoys is to indicate the position of the Telegraph Cable, and thereby to enable them, in bringing up their vessels, to avoid doing damage either to the cable or their own moorings.

Red Beacon Buoy, Mole at Gibraltar.—Masters of vessels arriving here have to notice that there is a Red Beacon Buoy placed 500 feet in a direct line from the New Mole Point in this bay, denoting shoal water within it, from the deposit of stone for the elongation of the said mole. The following is also the copy of a report recently made by Mr. W. W. Kiddle, Master of Her Majesty's ship *Cruiser*:—

"Red Beacon Buoy in 11 fathoms, bearing from the New Mole Head, N., 15° W. by compass, distant 500 feet. Marks, outer end of the Mole at the Ragged Staff, on with the centre of the Moorish Castle, N. 29° E."

Port Phillip, Victoria, South Australia.—Floating Lightship, Hobson's Bay.—A Floating Light is established at the north end of the west channel leading into Port Phillip Bay, in the same position as that hitherto occupied by the North Fairway Buoy, which is now removed. (Dec. 22, 1853).

The Lightship is painted Red, and exhibits, between sunset and sunrise, two Bright Lights, twenty-four feet apart, and fifty feet above the level of the water. These Lights may be seen from all parts of the horizon within the distance of nine miles in clear weather. Vessels

approaching the Lightship by night or by day are warned to be cautious in avoiding collision. The Lightship is moored in four fathoms at low water, with the following magnetic bearings:—

Extreme point of Indented Head	N.W. ¾ N.
Summit of Arthur's Seat	S.E. ½ E.
Extremity of Point Nepean	S.S.W. ½ W.

United States.—Nantucket New South Shoal Light, Coast of Massachussets, (May 22).—A Light Vessel will be placed at the southern extremity of the Nantucket New South Shoal. The vessel will be 200 feet long, 24 feet beam, gunwale 11 feet above water, and burthen 250 tons. She will be painted red, with "Nantucket South Shoal" in large white letters on both sides, but her two masts will be yellow with white mastheads, on which will be shown an oval black day-mark of open work 5 feet in diameter, at an elevation of 63 feet above the water. She will carry two fixed Lights, one on each mast, at an elevation of 44 feet, and visible 12 to 13 miles.

The position of the Light Vessel will be in lat. 40° 56′ 30″ N., and long. 69° 51′ 30″ W. of Greenwich; or a long mile to the southward of the southern extremity of the New South Shoal, in 13 to 15 fathoms water. The following bearings and distances will be sufficient to guide vessels in shaping their courses when near the Light:—

The middle of "Old South Shoal,"	N. by E.,	distant	8	sea miles.
"Tom Nevers Head," ...	N. 26° W.	,,	21	,,
"Block Island Lights," ...	W.N.W.	,,	78	,,
"Sandy Hook Light Vessel,"	West	,,	180	,,

Vessels bound to Boston or that vicinity, when the weather is moderate, may, after passing this Light, steer E.N.E. for eighteen miles, leaving Fishing Rip to starboard; and from thence a N. by W. ½ W. course for thirty-eight miles will bring them to the Chatham Lights. The mariner must be careful to allow for the set of the currents in the vicinity of these Shoals, as shown in the new Coast Survey Charts of the United States, when adopting any of the above courses. The above bearings are magnetic, the variation being 8° 18′ W.

NAUTICAL MEMORANDA.

Anonyma Rock, in Port Phillip Bay.—Commanders of vessels working up the east side of Port Phillip Bay are requested to take notice that a Chequered Buoy has been placed upon the eight foot rock off the Red Bluff, which has been ascertained to lie nearly two miles closer in shore than the position assigned to it in the charts. Commanders are recommended to notice the following bearings, and lay the rock's position down on their charts.

Magnetic Position of the Anonyma Rock.—Lighthouse, Gellibrand's Point, N.W. ¾ N. Centre of the Red Bluff, E. by S. A small white cliff, some distance north of the Red Bluff, N.E. ½ E. The Anonyma Rock lies a mile off the shore, the least water on it being eight feet at low tide, with five fathoms just outside, and a clear passage half a mile on the inside of it, with three and four fathoms sandy bottom.

CORSAIR ROCK.—A dangerous rock, with only eleven feet of water over it at low tide, has recently been discovered nearly three-quarters of a mile west of Point Nepean. It is not laid down in any of the charts of this port. Commanders of vessels navigating between the Heads are requested to observe the following marks in order to avoid the said rock (which will hereafter be known as the "Corsair Rock"), and are recommended to lay down its position on their charts as given underneath.

Magnetic Position of the Centre of the Corsair Rock.—Upper Lighthouse on Shortland's Bluff, N. 21° E. Middle of the rocky islet off Point Nepean, N. 87° E. Tidal Flagstaff on Point Lonsdale, N. 76 W. The above rock is about twenty feet in diameter; the least water found over it at low tide is eleven feet, with three, four, and five fathoms water all round. There is a clear passage between the Corsair Rock and the extreme end of Nepean Reef, of about a cable's length, with three, four, and five fathoms of water; but no vessel should ever attempt it, as the tide, both ebb and flood, sets with great force on Nepean Reef.

Marks to clear the Corsair Rock.—In working out between the Heads, keep the flagstaff on Observatory Point open half a cable's length with the lowest part of Nepean Point, until Shortland's Bluff flagstaff is half a cable's length open to the westward of the low lighthouse; which latter mark must be kept on until you open out Nepean Rock to the eastward of that point, when you are out clear of the rock and Nepean Reef.

In working in between the Heads, keep Shortland's Bluff flagstaff half a cable's length open to the westward of the low lighthouse, until you have the flagstaff on Observatory Point half a cable's length open to the lowest part of Point Nepean, which will lead you clear of the Corsair Rock; but to clear Nepean Reef, which lies a cable's length inside the rock, do not shut in the low lighthouse with Shortland's Bluff flagstaff until you open out the Nepean Rock to the westward of that point, when you are in clear of the reef.

NOTICE TO COMMANDERS OF VESSELS IN HOBSON'S BAY.—Commanders of vessels are requested to take notice, that for the purpose of enabling them to rate their chronometers, a time ball, painted black, will be dropped daily (Sundays excepted), from the top of the flagstaff at Gellibrand's Point, at the instant of one o'clock mean solar time, there corresponding to 15*h.* 20*m.* 19*s.* Greenwich time. As a preparatory signal, a blue pennant will be hoisted at the masthead at half-past twelve, and hauled down at ten minutes to one o'clock, when the ball will be run up to the masthead and dropped as above.

In the event of its being necessary at any time to suspend the dropping of the time ball, either from strength of wind, or any casualty occurring to the apparatus, this will be indicated by a white pennant being hoisted instead of the blue preparatory pennant. Assigned position of the time ball, lat. 37° 52′ 42″ S., long. 144° 55′ 28″ E.

TIDAL SIGNALS.—A flagstaff having been erected at Point Lonsdale, the following signals will be hoisted upon it between sunset and sunrise on and after this date, to denote the state of the tides at the Heads :—

A blue flag will be hoisted half-mast high when the tide begins to flow in the middle of the entrance between Points Lonsdale and Nepean, which will be kept flying all the first quarter of the flood tide. The second quarter, a blue flag at the masthead. The third quarter, a red flag half-mast high. The last quarter, a red flag at the masthead.

Ebb Tide.—The first quarter, a blue flag half-mast high, with a ball underneath. The second quarter, a blue flag at the masthead, with a ball underneath. The third quarter, a red flag half-mast high, with a ball underneath. The last quarter, a red flag at the masthead, with a ball underneath.

River Yarra Yarra.—The following Tidal Signals will also be hoisted at the foremast-head of the Water Police Hulk, moored at the entrance of the River Yarra, to denote the height of the tide on the Bar :—

When there is 8 feet water on the Bar, a ball will be hoisted at the masthead.

8½ feet	a ball half-mast high.
9 feet	two balls at the masthead.
9½ feet	two balls half-mast high.
10 feet	a blue flag at the masthead.
10½ feet	a blue flag half-mast high.
11 feet	a red flag at the mast-head.

(Signed) CHARLES FERGUSON,
Port and Harbour Master.

22nd December, 1853.

HURRICANE IN THE INDIAN OCEAN.

REPORT OF THE EARL OF BALCARRAS, CAPTAIN MORRIS; FROM BOMBAY FOR LONDON.

FEB. 21st, 2 A.M., an increasing steady breeze at N.E., in royal and topgallant studdingsails. At 6 A.M. increasing, in topmast and lower studdingsails. At noon moderate gale, in light sails, and took in double reef in the topsails. Lat 19° 37′ S., long. 38° 43′ E.; bar. 29·25, ther. 86; the wind S.W., sea very heavy and confused. 2 P.M., increasing gale, with heavy gusts; closereefed the topsails and furled the courses. At 4 P.M., bar. 29·80, weather looking very threatening and the gusts of wind very violent, furled the fore and mizen topsails, down royal yards, and made all requisite preparations for the impending storm; ship steering S.W. by S. At 6, furled the main topsail, and ran under the mizen and fore topmast staysail. At 7, hard gale; mizen staysail blew to pieces, and the ship falling off against her helm, came-to, with head E.S.E., sent down topgallant yards. At 8 A.M. hard gale, ship lurching and straining very heavily; bar. 29·68, wind N. At 10 P.M., in a heavy lurch, the fore topmast went by the cap, breaking the starboard anchor adrift, which was immediately cut

away. At midnight terrific lightning; wind S.W., increased to a hurricane; bar. 29·52, ther. 80. Lost the jib-boom and main top-gallant mast, the sea rising to an immense height, and the ship pitching very violently. Feb. 22nd, 1.30 A.M., the main topmast was carried away, wind E.N.E., bar. 29·41. At 2.30 the mizen mast was carried about 12 feet above the deck, carrying away the starboard-quarter boat, hen coops, rails, &c. At 3, the main mast fell with a tremendous crash, doing immense damage in the fall, having fallen across the mizen mast; the wreck stove in the poop deck, and injured the pump very considerably. Commenced clearing away the wreck as fast as possible, everything being cut away for the safety of the ship. Noon, hurricane raging in all its fury, and the sea much increased; bar. 29·30, ther. 81, lat. 19° 52′ S. At 1, had one of the stern ports stove by the wreck of the main mast; got all secured; found 3 feet of water in the gun-room. About 1.30, a heavy sea washed away the starboard-quarter gallery, which had been shattered by the wreck previously striking it, and the sea making a complete breach through the door. At 2.30, wind from the E.N.E., bar. 29·9, in a tremendous lurch, the foremast was carried away by the deck, falling over the port bow, and breaking the stock of the port bower anchor. At 8, wind S.E., bar. 29·5. Noon, the hurricane was at its height, bar. 29·1, ther. 79, wind S.S.E. 23rd, no decrease in the hurricane, the bar. 29, wind S; pumps kept constantly going. At 3, one of the stern ports was stove in by the wreck of the main topmast, on the gun deck, and much water was shipped before making it secure. At 8, wind S.S.W., bar. 29, weather a little brighter. At 10, the pumps sucked, having been worked by the soldiers and their officers over them 48 hours and upwards. Noon, weather rather better, but the sea tremendous. At 1, the hurricane seemed to freshen again, blowing in violent gusts, with hail and squalls, the sea rising immensely; all the rails fore and aft carried away. At 4 A.M., a heavy sea struck the ship, taking away the port quarter boat, and starting the long boat from lashing; both binnacles washed away. Towards midnight blowing hard, but the weather evidently better; bar. 29·10, ther. 70, wind S.W. 24th, weather considerably better, and less sea; commenced to rig the jury masts, and made for the Cape.

WAR PROHIBITIONS.

At the Court at Buckingham Palace, the 8th day of June, 1854; present, the Queen's Most Excellent Majesty in Council.

Whereas it has appeared expedient and necessary to Her Majesty, by and with the advice of her Privy Council, by reason of the hostilities now subsisting between herself and his Imperial Majesty the Emperor of all the Russias, to prohibit the goods hereinafter mentioned to be exported from the Islands of Jersey, Guernsey, Alderney, and Sark, and the Isle of Man, except as hereinafter provided:

Her Majesty is pleased, by and with the advice of her Privy Council aforesaid, to order, and it is hereby ordered, that from and

after the publication of this order in the said islands respectively, all arms, ammunition, and gunpowder, military and naval stores, and the following articles, being articles deemed capable of being converted into or made useful in increasing the quantity of military or naval stores; that is to say—marine engines, screw-propellers, paddle-wheels, cylinders, cranks, shafts, boilers, tubes for boilers, boiler-plates, fire-bars, and every article, or any other component part of an engine or boiler, or any article whatsoever, which is, can, or may become applicable for the manufacture of marine machinery—shall be, and the same are hereby prohibited to be exported from the said islands of Jersey, Guernsey, Alderney, and Sark, and the Isle of Man, except with the licence of the governor, or other officer administering the government of any of such islands respectively, for that purpose first had and obtained.

And the lieutenant-governors of her Majesty's islands of Jersey, Guernsey, Alderney, and Sark, and of the Isle of Man, for the time being, are to give the necessary directions herein as to them may respectively appertain. C. C. GREVILLE.

BLOCKADE OF THE BALTIC COAST OF RUSSIA.

IT is hereby notified, that a communication has been received by the Lords Commissioners of the Admiralty, from Vice-Admiral Sir Charles Napier, commanding her Majesty's naval forces in the Baltic, dated Hango Bay, 28th May, 1854, informing their lordships that the ports of Libau and Windau, on the coast of Courland, and other ports, roads, havens, or creeks, from lat. 55° 63′ north, to as far north as Cape Dager Ort, including the ports of Riga, Pernau, and all other ports, roads, havens, or creeks in the Gulf of Riga, were then in a state of blockade by a competent force.

That all ports, roads, havens, or creeks, eastward from Cape Dager Ort, including Hapsal, Wormsö Island, Port Baltic, Revel, and other intermediate ports on the coast of Esthonia, as far as Ekholm Light (situated in lat. 59° 43′ north, long. 25° 48′ east); and from thence in a north-west direction as far as Helsingfors and Sweaborg, on the coast of Finland; continuing westward, Baró Sound, Hango Head, Oro, and Abo, including the Aland Archipelago and intermediate ports; from thence north, including Nystad, Biorneborg, Christinestadt, Vasa, Walgrund Islands, Little Carleby, Iacobstadt, Great Carleby, Lahts, Kalawiki, Brahestad, Uleaborg, Kearle Island, Tio, Gestila, Tornea, Ned, Tornea (situated in lat. (about) 65° 50′ north, long. 24° 15′ east,) and all intermediate Russian ports, roads, havens, and creeks in the Gulf of Bothnia, and all the before-mentioned ports and places, are and were then in a state of strict blockade by a competent force.

And it is hereby further notified, that all the measures authorised by the law of nations and the respective treaties between her Majesty and the different neutral powers, will be adopted and executed with respect to all vessels which may attempt to violate the said blockade.

BRITISH SHIPS.

RETURNS of British Ships employed in the Trade of the United Kingdom in the Years 1849, 1850, 1851, 1852, and 1853, (not including repeated Voyages.)

These Returns embrace Vessels belonging to the Channel Islands, but not Vessels registered in the British Plantations.

1.—RETURN of the Number and Tonnage of British Registered Vessels employed solely as Home-Trade Ships in the Years 1849, 1850, 1851, 1852, and 1853, with the Number of Men employed; distinguishing Sailing Vessels from Steamers.

Years.	Sailing Vessels.			Steam Vessels.		
	Number of Vessels.	Tonnage.	Number of Men employed.	Number of Vessels.	Tonnage.	Number of Men employed.
1849......	9,298	665,726	40,208	312	54,089	4,442
1850......	8,830	666,957	38,527	320	54,196	4,491
1851......	8,898	685,641	36,906	368	78,820	6,048
1852......	8,776	701,803	35,793	358	66,606	5,182
1853......	8,477	689,342	36,051	374	85,471	6,689

2.—RETURN of the Number and Tonnage of British Registered Vessels employed partly as Home-Trade Ships, and partly as Foreign-going Ships, in the Years 1849, 1850, 1851, 1852, and 1853, with the Number of Men employed; distinguishing Sailing Vessels from Steamers.

Years.	Sailing Vessels.			Steam Vessels.		
	Number of Vessels.	Tonnage.	Number of Men employed.	Number of Vessels.	Tonnage.	Number of Men employed.
1849......	1,897	281,951	12,715	20	5,539	262
1850.....	1,487	222,341	10,291	20	5,298	396
1851......	1,489	242,656	8,570	18	4,926	282
1852......	1,063	147,867	6,875	42	15,244	944
1853......	970	156,800	7,134	28	7,250	560

3.—RETURN of the Number and Tonnage of British Registered Vessels employed solely as Foreign-going Ships in the Years 1849, 1850, 1851, 1852, and 1853, with the Number of Men employed; distinguishing Sailing Vessels from Steamers.

Years.	Sailing Vessels.			Steam Vessels.		
	Number of Vessels.	Tonnage.	Number of Men employed.	Number of Vessels.	Tonnage.	Number of Men employed.
1849......	6,612	2,040,344	91,242	82	48,693	3,742
1850	7,149	2,143,234	93,912	86	45,186	3,813
1851......	7,277	2,287,897	85,801	134	60,995	4,330
1852......	7,431	2,365,995	103,618	149	83,369	7,151
1853......	8,120	2,665,685	111,821	237	125,539	10,270

4.—AGGREGATE RETURNS, 1, 2, and 3, showing the Total Number of BRITISH REGISTERED VESSELS employed in Trading in, from, and to *Great Britain* and *Ireland*, in the Years 1849, 1850, 1851, 1852, and 1853, with their Tonnage and Number of Men.

YEARS.	SAILING VESSELS.			STEAMERS.*		
	Number of Vessels.	Tonnage.	Number of Men employed.	Number of Vessels.	Tonnage.	Number of Men employed.
1849......	17,807	2,988,021	144,165	414	108,321	8,446
1850......	17,466	3,032,532	142,730	426	104,680	8,700
1851......	17,664	3,216,194	131,277	520	144,741	10,660
1852......	17,270	3,215,665	146,286	549	165,219	13,277
1853......	17,567	3,511,827	155,006	639	218,260	17,519

* River Steamers are not included in this Return.

5.—TOTAL SAILING VESSELS AND STEAMERS TOGETHER.

YEARS.	Number of Vessels.	Tonnage.	Number of Men employed, exclusive of Masters.
1849	18,221	3,096,342	152,611
1850	17,892	3,137,212	151,430
1851	18,184	3,360,935	141,937
1852	17,819	3,380,884	159,563
1853	18,206	3,730,087	172,525

NOTES.—Home-trade ships are ships trading on the coasts of the United Kingdom, or to ports within the limits of the rivers Elbe and Brest; Foreign-going ships are ships trading beyond those limits.

In the above return of foreign-going ships it is possible that some ships may be included which have now ceased to exist, or are no longer employed as British ships; but such vessels have, whenever found possible to ascertain the fact, been struck off, and in no case has any ship been included which has not been reported as a foreign-going ship within four years.

No home-trade ship is included which has not been reported within one year.

In the above returns of men employed, masters are not included; a very small deduction ought, however, to be made for the case of men who, after being discharged from one ship, join another immediately, the former vessel remaining in port.

J. H. BROWN, REGISTRAR.

General Register and Record Office of Seamen,
Custom House, London,
8th February, 1854.

TO CORRESPONDENTS.—*It is particularly requested that all Communications be sent to the Editor as early in the month as possible, and not later than the* 18th.

[*All communications to be addressed* "EDITOR OF THE MERCANTILE MARINE MAGAZINE, *care of Mr. W. Foster,* 114, *Fenchurch Street, London.*" *N.B. The real name and address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*]

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

AUGUST, 1854.

THE EDUCATION OF THE MERCHANT OFFICER.

At a time when the diffusion of cheap books and cheap schools so largely engages the public mind—when an Educational Exhibition, under the auspices of the Society of Arts, is daily open in a large hall of the metropolis, in which the various materials of instruction from all parts of Europe and the United States may be seen and compared—and when those who enjoy the advantages of knowledge are striving to take the lead in the adoption of measures which shall extend the benefits they can so well appreciate to every class, it may not be amiss to take a retrospective and prospective glance at the position of the Merchant Officer in respect to the important question of education. We are at the same time glad to acknowledge that our task will be somewhat less arduous and less invidious than it might otherwise have been, since some of the ablest officers of the Mercantile Marine have given their attention in this direction; and while Capt. Methven, in *The Log of a Merchant Officer*, particularly addresses himself to the necessity of a more extended scale of instruction for those young men who aspire to a command in the Merchant Service in its more regenerate state, the Board of Trade has also authorised the establishment of schools in connexion with the Sailors' Homes, in which every branch of scientific training which may be of service to the seaman and navigator is to be introduced. That our views on this subject will meet with more or less of censure we fully anticipate. It will always happen that among a large class of men engaged in any particular service, or on any special branch of trade or industry, some will feel aggrieved when an innovation on the old jog-trot system is proposed—but we are so confident of the advantages to accrue from an extension of the system of education among young officers of the Merchant Service, that we unhesitatingly

pronounce for any comprehensive plans which may promote or accomplish so desirable an end.

It is no unfrequent thing for nautical persons, who advocate the *laissez faire* system, to point to the great epochs of maritime discovery and colonization, when a large number of the men, who achieved the brilliant successes which established England's claim to the sovereignty of the ocean, came from the Merchant Service. Our answer is, that those men are entirely misunderstood by their brethren of to-day; if the test be one of daring, courage, and endurance, the true British seaman is the same now that he always was; but with the earlier generations of navigators and their companions there was superadded an amount of energy and enthusiasm which is not now so generally found in the same class; and further, as regards literary and scientific culture, they took a high position in the age in which they lived. It is not our purpose to trace the circumstances which have led to deterioration in this respect—they are many; but we are bound to acknowledge that the fault is not wholly chargeable on the nature and character of the Merchant Service itself, but arises rather from causes beyond it—partly from society—partly from the system under which the commerce of the country has been conducted. The fact however remains; but it is by no means impossible to make a considerable alteration for the better, and to do this effectually we must commence with the youth who are destined to sea-service—always remembering that the popular idea of the sailor is an erroneous one—that the "uncultivated, idle, and profligate," are not those who will be *sure* to do well by going to sea: but, on the contrary, if they do not take with them the elements for future development, they are totally out of place on the deck of a ship. Let us hear Capt. Methven on the subject:—

"The present type of young gentlemen of a ship, with gold round their caps, and the sea-boys, are, as a body, very far from being creditable to the country or the service to which they belong. To the cursory observer they may appear neat, well-dressed, and very like merchant officers. But nothing is more unreal than the popular conception of sailors. The public view of a sailor is that he must be a figure that rolls, turns his elbows out, squirts tobacco, and has a red face, in fact, a sort of perambulating 'rude Boreas,'—while every middy must be a little moon-faced urchin with blue eyes, curly hair, and short legs.

"But in reality the young gentleman and the sea-boy are very different. Types shall be taken that one may see a dozen times repeated in a walk through Blackwall. The first type is that of the class which the Scotch denominate 'neer-do-weels.' They still retain traces of gentle nurture, but in youth have been idle, unruly, and vicious boys, quite unmanageable at home, and, therefore, as their sapient parents think, just the character of lads suited for a sea-life. Even after two or three voyages they have acquired no real professional knowledge, their attainments not being greater than the power of taking a 'tally,' although few officers would trust to its accuracy if registered by them, and their accomplishments are confined to the *smoking* of a large quantity of cheroots. They are useless as seamen,

for if the chief officer ever got them into the top, he never saw them at a lee or weather earing. They rarely become officers of course, always deteriorate, and finally disappear from the stage altogether.

"The next type of the young gentleman observed at Blackwall is the well-disposed youth, who has gone to sea in consequence of his own longings often resulting from a romantic disposition. He is seen walking about, trim and neat, his admiring father having just had him photographed at Claudet's for the benefit of the family circle. All looks pleasant and hopeful to them now, and, in reality, there is a little more chance for him than in the former case, but he has still fearful odds against his success. Neither the father, mother, nor any of his family have the slightest conception of the life upon which he is entering, and accordingly have not prepared him for its duties. They send their frail but favorite bark on the ocean without anchor or tackle, all the fittings necessary for its security being deficient.

"There is an humble class of lads, the sea-boys, to me equally interesting, and they too have not the fair prospect before them that one would wish to see. Sometimes they start fairly however, as when the wise and careful mother brings her sea-boy on board, and knowing some old forecastle hand puts him under his charge, with a conciliatory present, and a gentle request for her son, accompanied by the 'mother's own look.' Then they are right enough; but when we find the sea-boy badly educated, untrained, and neglected by his parents, thrust into a ship, it can scarcely be expected that he can become a good seaman, everything being against his comfort, physiological development, and mind-culture."*

If, however, it has been determined, after due consideration of the responsibilities attaching thereto, that the lad adopt the seaman's life, it would be well for him to "ask himself whether idleness had not better be put to one side, and a preparatory training entered on, which would fit him becomingly to discharge his important duties. It is a startling fact, but a well-ascertained one, that of all the lads of good connexion, with ample previous means for a good education, who have entered on a sea-life at the port of Blackwall in the course of the last fifteen years, certainly not twenty have risen in their profession to command a ship. The ships of this port have afforded every opportunity which a youth or his friends could desire, more so than the ships of any other port or of any other country that I am acquainted with, yet this is the melancholy result, and it can only be explained by the circumstance that the lads have entered on a sea-life without a sufficient training for its duties."*

We venture to affirm, that of a large number entering on the sea-service, who hope, sooner or later in life, to rise above the level of the ordinary or able seaman—be it in the coaster or the first-class foreign-going trader—the majority find themselves incapacitated from taking a higher position, owing to a lack of the necessary amount of information required for the fulfilment of the duties necessary to be undertaken by master or mate. Lord Ashburton on a recent occasion,

* *Log of a Merchant Officer*, pp. 8–10–14.

speaking of the necessity which exists for the *teaching of common things*, said that "in this practical country the knowledge of all that gives power over nature is left to be picked up by chance in a man's way through life." To the sea-faring man such knowledge is of vast importance, but too freqnently his stock of information is so scanty, that in order to his appreciation of the philosophy of common things, it would be necessary for him to enter on a yet more elementary course than is proposed in such a teaching.

Previous to 1851 an examination into the efficiency of the various grades of officers in the Merchant Service had been in existence; but it not being compulsory that an officer should hold a certificate granted by the Board of Examiners, the number of candidates for such distinctive recommendations were by no means numerous; but since that date the system has undergone a change, and in any foreign-going vessel the officers, entering for the first time on their respective duties, whether as mate or master, are required to undergo an examination before one of the Local Marine Boards, when, if they pass the ordeal successfully, they are furnished with a "Certificate of Competency." The tests as they stand at the present moment are as follow:—

A SECOND MATE must be seventeen years of age, and must have been four years at sea. He must write a legible hand, and understand the four first rules of arithmetic, and the use of logarithms.

In Navigation.—He must be able to correct the courses steered for variation and leeway, and find the difference of latitude and longitude therefrom; be able to correct the sun's declination for longitude, and find his latitude by meridian altitude of the sun; and work such other easy problems of a like nature as may be put to him. He must understand the use of the sextant, and be able to observe with it, and read off the arc.

In Seamanship.—He must give satisfactory answers as to the rigging and unrigging of ships, stowing of holds, &c.; must understand the measurement of the log-line, glass, and lead-line; be conversant with the rule of the road, as regard both steamers and sailing vessels, and the lights carried by them.

AN ONLY MATE must be eighteen years of age, and have been four years at sea.

In Navigation.—In addition to the qualification required for a Second Mate, an Only Mate must be able to work a day's work complete, including the bearing and distance of the port he is bound to, by Mercator's method. He must be able to observe, and calculate the amplitude of the sun, and deduce the variation of the compass therefrom. He must know how to lay off the place of the ship on the chart, both by bearings of known objects, and by latitude and longitude. He must be able to use a sextant and determine its error, and adjust it, and find the time of high water from the known time at full and change.

In Seamanship.—In addition to what is required by a Second Mate, he must know how to moor and unmoor, and to keep a clear

anchor; to carry out an anchor; to stow a hold; and to make the requisite entries in the ship's log.

A FIRST MATE must be nineteen years of age, and have served five years at sea, of which one year must have been as either Second or Only Mate, or as both.*

In Navigation.—In addition to the qualification required for an Only Mate, he must be able to observe azimuths and compute the variation; to compare chronometers and keep their rates, and find the longitude by them from an observation by the sun; to work the latitude by single altitude of the sun, off the meridian; and be able to use and adjust the sextant by the sun.

In Seamanship.—In addition to the qualification required for an Only Mate, a more extensive knowledge of seamanship will be required, as to shifting large spars and sails, managing a ship in stormy weather, taking in and making sail, shifting yards and masts, &c., and getting cargo in and out; and especially heavy spars and weights, anchors, &c.; casting ship on a lee-shore; and securing the mast in the event of accident to the bowsprit.

A MASTER must be twenty-one years of age, and have been six years at sea, of which one year must have been as First or Only Mate, and one year as Second Mate; or two years as First and Only Mate.*

In addition to the qualification for a First Mate, he must be able to find the latitude by a star, &c. He will be inquired of as to the nature of the attraction of the ship's iron upon the compass, and as to the method of determining it. He must possess a sufficient knowledge of what he is required to do by law, as to the entry and discharge, and the management of his crew; as to penalties and entries to be made in the official log. He will be questioned as to his knowledge of invoices, charter-party, Lloyd's agent, and as to the nature of bottomry, and he must be acquainted with the leading lights of the channel he has been accustomed to navigate, or which he is going to use.

In cases where an applicant for a certificate as Master ordinary has only served in a fore and aft rigged vessel, and is ignorant of the management of a square rigged vessel, he may obtain a certificate on which the words "*fore and aft rigged vessel,*" will be written. This is not, however, to apply to Mates, who, being younger men, are expected for the future to learn their business completely.

An EXTRA MASTER'S EXAMINATION is intended for such persons as are desirous of obtaining command of ships and steamers of the *First Class.* Before being examined for an Extra Master's Certificate, an applicant must have served one year either as Master with an *ordinary Certificate of Competency*, or as a Master having a *First Class Certificate*, granted by one of the former Board of Examiners.

In Navigation.—As such vessels frequently make long voyages to the East Indies, and the Pacific, &c., the candidates will be required to

* Service in a superior capacity is in all cases to be equivalent to service in an inferior capacity.

work a lunar observation by both sun and star; to determine the latitude by the moon and star, by polar star off the meridian, and also by double altitude of the sun, and to verify the result by Sumner's method. He must be able to calculate the altitudes of the sun or star, when they cannot be observed, for the purpose of lunars; also to find the error of a watch, by the method of equal altitudes; and to correct the altitudes observed with an artificial horizon.

He must understand how to observe and apply the deviation of the compass; and to deduce the set and rate of the current from the D. R. and observation. He will be required to explain the nature of Great Circle Sailing, and know how to apply practically that knowledge; but he will not be required to go into the calculations. He must be acquainted with the Law of Storms, so far as to know how he may probably best escape those tempests common to the East and West Indies, and known as hurricanes.

In Seamanship.—The extra examination will consist of an inquiry into the competency of the party to heave a ship down, in case of accident befalling her abroad; to get lower masts and other heavy weights in and out; how to construct rafts, and as to his resources for the preservation of the ship's crew in the event of wreck, and in such operations of a like nature as the examiner may consider necessary.

If we compare the above with what is demanded by any other maritime country in Europe, where a diploma of proficiency for sea-service is granted, it will be found that our standard is vastly inferior, since it comprises nothing more than what an officer might be required to carry out any day of the voyage, and he is enabled to obtain a certificate of competency without possessing the slightest knowledge of the simplest elements on which his work is based. That this will not be always the case, we are led to hope, since it has been announced "that it is the intention of the Board of Trade to raise the standard from time to time, whenever, as will no doubt be the case, the general attainments of officers in the Merchant Service shall render it possible to do so without inconvenience."

On the introduction of the examination in 1851, it was regarded by the majority of Captains as a source of great inconvenience and hardship since the test was indiscriminately put to all, whether their period of command extended to one or fifteen years, and their certificate of service was not held to be of sufficient value under a variety of circumstances. The same inconvenience and annoyance will be experienced at whatever period the standard may be raised, unless an announcement to that effect be given very differently from the previous one in 1851, and we *do not doubt*, but *know for a certainty* that those who are now young at sea will not trouble themselves about attainments to be required at an indefinite period. It may well be asked how we are able to speak with such confidence, and on what authority we make this statement. It so happens we have had the opportunity of becoming intimately acquainted with the precise value of the attainments of nearly 400 persons of various ages in the Merchant Service—captains, mates, and young men undergoing the ordeal preparatory

to becoming officers; of the latter class, comprising more than half the above number, we can truly say that, with two exceptions, a couple of years more schooling under a firm disciplinarian would have been of essential benefit to them; and we could also mention numerous cases among the former classes, in justification of Capt. Methven's observations on the deficiency of education for sea-service, and of his advocacy of higher attainments in the young men who henceforth propose to adopt the seaman's life. Those who have gone to sea since 1851 are in no respect in advance of those of an earlier date of service, since they are fully aware they can easily *cram* for the examination, and that in a short time.

"To the cultivated lad there is a new world spread out when he enters on his voyage. As his education has fitted him, so will he perceive, year by year, that his profession makes him acquainted with things new and instructive. His intelligence will enable him to appreciate the contrasts of each country in general aspect, manners, and productions; in its modes of navigation, adapted to the character of coast, climate, and rivers. He will dwell with interest on the phases of the ocean, the storm, the calm, and the breeze, and he will look for traces of the laws which regulate them. All this will induce a serious earnestness in his work, and teach him to view lightly those irksome and often offensive duties incident to the beginner."

It is with these impressions that Capt. Methven advocates a sound English education, with a thorough knowledge of arithmetic, and, as "a mathematical basis is positively necessary for the youth who is to acquire an intelligent idea of even the simplest operations in navigation," instruction in the following branches must follow, viz., Algebra, Geometry, the use of Logarithms and Trigonometry—together with Statics, Dynamics, Hydrostatics and Hydrodynamics—Navigation—Descriptive and Physical Geography—the Elements of Meteorology as a preparation for more practical experience—and, if the taste lead that way, Drawing, and the study of some modern Language.

With the same praiseworthy efforts to stimulate the desire for improvement, the Board of Trade has sanctioned the following courses of instruction in the schools at the Sailors' Homes:—Reading, Writing, Arithmetic, Geography, Sextant Observing, Chart Drawing, Geometry, Algebra, Trigonometry, the Sailings, Use of the Nautical Almanac and Mathematical Tables, Methods of determining the Latitude and Longitude, Principle and Construction of Chronometers, Nautical Surveying, Compasses and Magnetism of Ships, Theory of Winds, Tides, and Currents, Methods of taking and recording Meteorological Observations, the Principle and Construction of the Steam Engine as applied to the Paddle-wheel and Screw-propeller, Methods of keeping Ships' Books, with other subjects relating to a seafaring life. The Classes will be conducted by qualified Masters, and under the general superintendence of Mr. Edward Hughes, Master of the R.N. Lower School, Greenwich Hospital. The private schools will undoubtedly follow in the same direction.

We are also justified in expecting that Owners will aid to the

utmost in the carrying out of these endeavours to elevate the character of the Merchant Service, since they must share, to a very large extent, in the advantages which such a system of training will necessarily produce. On them we particularly urge the perusal of Capt. Methven's book, and among the numerous changes he recommends it is hoped they will not forget the "Chart Room" for the officers;—and we also trust that cartridge-paper log-books, with pasteboard covers and extemporaneous ruling, may be speedily consigned to oblivion.

The following observations at the present time are exceedingly appropriate :—

"Let us consider the variety of the voyages which are now prosecuted, the intricacies of navigation, and the frequent periods of dark unsettled weather during which the interests and competitions of commerce demand that the merchant-commander must still press onward towards his port; let us also reflect that the storms of winter and sweeping devastations of hurricanes during the changing periods of monsoons are the same now as they have ever been, and that rather than encounter the incidental risks of these changes, the best-equipped man-of-war, or merchant-ship, formerly remained in port for weeks, and this as late as within the last fifteen years; whereas now, undeterred by season or indications of barometer, our vessels go to sea with the punctuality of express trains.

"If we consider that, with the best form and strength, our merchant-ship can outsail, battle with, and gain to windward of such odds, when capably handled and properly manned; that she bears on her freight-list what no underwriting can reach,—life in all its varied yarns,—the open threads of new acquaintanceship, the stouter strand of friendship, the intertwined and enduring cable of married life, how must the heart of a thinking commander sicken when he considers the halting means he has to care for such a charge, and to guard such wealth of life and affection! Almost cast adrift from the shore, he finds his crew 'grass combers,' and stupid from dissipation—his decks lumbered and filthy—his cabins a scene of disarrangement and confusion, and every one looking to him for directions and comfort in their deadly sickness, or the newness of things around them. Turning from these distractions to his immediate professional duties, he refers to the log-slate for those entries which are the data for estimating his ship's position from observation to observation, and knows that there has not only been a most imperfect education for those who have to record them, but also deficient convenience to give accuracy to its registries. Hence it is absolutely necessary that the importance of the log should be fully recognised, for upon it the safety of the whole ship depends; the necessity that it should be strictly accurate cannot be exaggerated, and this conviction should be present to the mind of the officer throughout his watch, and stimulate the closest attention to the duties of the deck, so that, when the log-slate is taken up as a record of truth, he may be prepared to note down at least a careful approximation to it.

"The log-book, being taken as a valid evidence in courts of law, demands thought and exactness; and it equally requires it when

viewed as a register of meteorological data, descriptive of winds, weather, and states of atmosphere, and of the courses of storms and ocean-currents. All this enhances its philosophical value as a means of collecting facts which may result in useful modifications of our present practice of navigation, and perhaps enable the philosopher to discover the laws regulating what, in our ignorance, only appear to be capricious changes of the weather. The log-book, thus rendered faithful, would then become an important instrument of discipline, for its evidence against character would be weighty in the belief of its truthfulness, which ought to be undoubted in the simple fact that it *is found in the log-book*."*

The extended range of studies advocated in the foregoing pages, and now demanded by many intelligent commanders, if followed by an examination commensurate with such a preparation, would greatly raise the value of the "Certificate of Competency"—while to the young officer himself the advantages would be inestimable, enabling him to attain a position so easily within his reach of moral dignity and self-respect. Education and a judicious training for the duties to be performed are now recognised as necessary elements to success in life; to procrastinate is dangerous, for he who determines to go on working in ignorance of the principles of his avocations cannot hope to rank with his more skilful compeer, and he who lingers in the race of intellectual improvement must be content to serve, not command.

To carry out effectively the plans proposed, and in order to produce the least amount of dissatisfaction possible, it will be necessary to give *ample* notifications of change in the standard of proficiency. It is required that the second mate's service at sea should be at least four years, and, allowing for the previous preparation of two years, no alteration to the necessary extent could with justice be commenced under a period of six years, say 1860—which, if made public through the proper channels, by advertising and by notices issued through the sailors' homes and private nautical academies in the various sea-ports of the country, would become sufficiently known and be responded to.

For the present we close the subject, promising to recur to it at no distant day. We would briefly intimate that it has been remarked that "merchant sea-life and the interests of its members are altogether unrepresented in the country." Let the officers of the Merchant Service persevere in the new field which lies before them; they will then *surely* be represented, and speaking with a voice potential and united will as surely be heard in the advocacy of their rights and interests. At the present moment they are a disunited and disorganized body—they have not so much as a Club-house where they can assemble on the return voyage, and take up a temporary abode if so inclined; we urge this on the consideration of commanders in the Merchant Service—it is quite possible for them to have such an establishment, on a scale equal to the best of the kind in the metropolis, and last, not least, a Maritime College for the education of youths destined to sea-service. M.

* *Log of a Merchant Officer*, p. 34.

CONTRIBUTIONS TO THE HISTORY OF THE LAW OF STORMS.

HURRICANE OF THE LADY JOCELYN IN THE INDIAN OCEAN,

March 1*st to* 6*th*, 1854.

EVERY addition to our knowledge of storms must be invaluable, especially when we occasionally find one of these visitors, such as the hurricane in which the *Lady Jocelyn* was involved, puzzling the experienced Captain, and *apparently* playing such freaks that it is difficult to reduce its motions to rule and order. Raging between the meridians of 70° and 80° E., but not felt at the Mauritius westward of 60° E., it has been regarded as remarkable that so violent a hurricane should not have made itself felt further westward than 65° E. An earlier hurricane in the Mozambique Channel has been considered as identical with the present one. "Can that cyclone have travelled eastward? Or what become of it?" These questions have been put; but where is the evidence of the further passage of the Mozambique hurricane to the meridian of 70° E.? Having been met with as far south as latitude 19°, could it have passed eastward without giving indications of its presence near the Mauritius? We are inclined to say it could not.* But there are other considerations that appear to indicate the unlawful character of the hurricane of the *Lady Jocelyn.* The ship penetrated to the calm in the centre—well for her she was strongly built; and came out of the ordeal as a perfectly-safe sea-boat. She met the calm having had the wind furiously from the *north;* the main topsail and foresail were blown away, top-gallant masts, topmasts, quarter boats, in fact every thing that could be laid hold of fell a sacrifice to its violence, and then a sudden calm ensued. An hour afterwards the wind again came on with terrific violence from the *west*, an altogether unlawful proceeding on the part of this fearful visitant. The storm books say the wind springs up after the calm from the *opposite* quarter; here we have it at *eight* points. Surely there must be something *not* understandable about this. And then how curious, how exceedingly remarkable, how very unlawful that the same changes of the wind should occur after the calm as before! Captain Miller, who so advantageously employed the tail winds of the Madras hurricane of 1842 in sailing from Nagore to Madras, was on board the *Lady Jocelyn.* To this experienced Captain we are indebted for an account of the hurricane of the *Lady Jocelyn*, inserted in the *Nautical Magazine* for July in the present year. These unlawful proceedings on the part of the storm, the Captain writes "are stumbling blocks to my faith, which I will look to Dr. Thom and Mr. Piddington to remove, to prevent my relapsing to my former unregenerated state of darkness and doubt on the subject." Captain Miller appears to have had an idea of this kind—that the *Lady Jocelyn* was involved in

* We are now in a position to say that in our next number we shall be able *to insert* information on the Mozambique hurricane, as we have just obtained *sufficient* elements for the purpose.

a very "big" *stationary* gale, and that a little "cyclone came up from the S.E., entered the 'big' one just where the *Lady Jocelyn* was lying, gave the ship a whisk with its northern edge, and was then annihilated by its 'big brother.'" "What say you to this opinion Sir Stormy Jack," writes the Captain further; "You must try to clear up the matter somehow or other." Well, *we* accept the Captain's invitation, and although we cannot lay claim to the title, yet we hope to make it evident that we belong to the family of Stormy Jack, and will do our best to prevent the relapse of the Captain into that "state of darkness and doubt," which it appears is beginning to overspread his mind from the behaviour of the *Lady Jocelyn's* hurricane.

Captain Miller narrates that the wind veered between the 28th of February and the 4th of March from *west* to *north* by N.W. These winds characterise the N.E. quadrant of a revolving storm in the southern hemisphere; so that there can be no manner of doubt that from the time the *Lady Jocelyn* left the equatorial calms, (which she did when in 2° S. latitude,) she was involved in the gyrations of the cyclone until she came up with its centre, after having lost her top-gallant masts, topmasts, sails, quarter boats, &c. Immediately upon leaving the calms she fell in with a westerly wind, accompanied with very peculiar kind of weather; the centre then was clearly *south* of her; but as the wind veered towards north it is as equally clear that the centre was *southward* and *westward* of her. From the notes of Captain Miller it is evident the ship made westing and southing, the earliest latitude and longitude being 7° 33′ S., 78° 21′ E., and the latest 12° 46′ S., 75° 5′ E., and then she ran 220 miles on a course about S.W. by W. during the next twenty-four hours. This was before the hurricane commenced, according to the usually-received ideas of these destructive storms; but if the reader will have the kindness to refer to the *Mer. Mar. Mag.*, pp. 53 and 214, he will find that we have separated two typhoons encountered in the China sea into two portions, the *non-effective* and *effective* or *destructive* portions. Now it appears that such an arrangement will apply to the present hurricane. For four days the ship ran in the *non-effective* portion, weather squally, damp, dull, close, and "muzzy;" it was on the 4th of March the royal and top-gallant yards were sent down and the topsails reefed, the barometer had fallen from 29·75 on the 1st to 29·54 on the 4th, wind blowing a "single reef" breeze about midnight, which, by daylight, had increased to a "double reef gale;" it was now that the presence of a cyclone began to be recognised.

If we are correct in the idea that cyclones consist of two distinct portions of gyrating winds, then it is evident that this hurricane was moving in the usual direction towards the S.W., the centre being in advance of the ship, which was rapidly gaining on it. A remark in Captain Miller's narrative is extremely valuable as to the well-defined circumference or edge of the effective portion; he says, "another remarkable feature of this storm is the rapidity with which we got into it. I have made a distinction between a gale and a hurricane that most seamen will admit of." The Captain had previously said "there is an unmistakeable *something* about the wind, rain, and other

general appearances during the main strength of hurricanes that once seen cannot be forgotten; they are as different from a gale as a *white* man is from a *black*." "To make use of my simile of a white man and a black, this storm underwent the change with hardly an intermediate shade; in fact, we seemed to jump out of the one into the other at a bound. I do not remember so sudden a change taking place before; the edge of this cyclone seemed to be as well defined as that of a mill-stone revolving. *It might be well to bear this in mind, and to make a ship snug before-hand, for after the cyclone has been entered nothing can be done above the deck.*" We so cordially agree with the last sentence that we have printed it in italics.

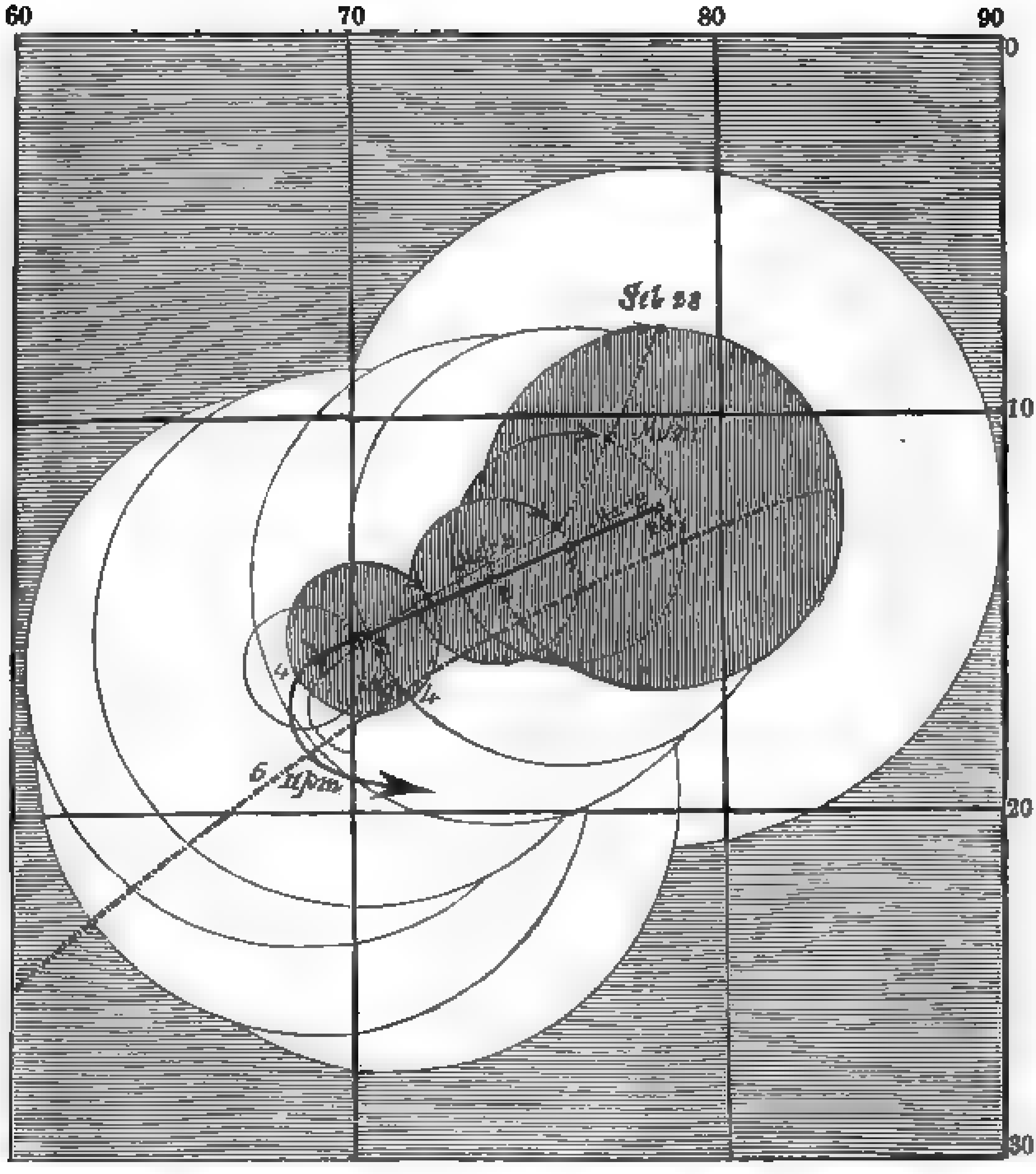
Now let us apply the knowledge we have obtained of the two portions of the *Lady Jocelyn's* hurricane to the puzzling features recorded by Captain Miller. It would seem that it is perfectly clear that this hurricane was pursuing the ordinary paths of hurricanes in the northern portion of the Indian Ocean, viz. towards the S.W.; and it appears as equally clear that the ship *jumped* into the effective portion with a northerly wind, the centre of course *west* of her. It is very probable she was contending with the "spirit of the storm" some twelve hours or more before she got the calm, and during a great portion of this time she was scudding and drifting *south* nearly a hundred miles. How was the storm moving during this period? It was certainly *not* pursuing its S.W. course—had it been, the ship would have drawn from the centre, the wind veering east, a result which Captain Miller looked for but did not find, and this circumstance suggested the hypothesis of the *big* and *little brother* cyclones. Now we find that during the continuance of the hurricane the winds had drawn round to north and seemed *fixed* there; it was a hanging wind, and what did this denote? Nothing more nor less than that as the ship scudded south, the storm also moved south—this is the legitimate conclusion. In point of fact, the storm at this juncture *recurved*, it was in the neighbourhood of Birt's line of recurvature, and such a state of things might have been looked for, bringing the calm centre right upon the ship which it did; and here we have two of the puzzling circumstances fully explained. Why was this hurricane *not* felt at the Mauritius? Simply because it passed off *towards* the S.E. after it had recurved. Why did the wind spring up from the west after the calm? Simply because the sweep of the centre of the hurricane in recurving was *westward* of the ship's course, and as it made southing and easting it soon came upon the ship's meridian, and then the wind sprung up with great violence from the west.

There is now only one difficulty more to dispose of; it is the unlawfulness of the wind backing round to the north after the westerly wind, as experienced by the vessel upon coming out of the calm. We are informed that during the time the wind drew round to the north the ship drifted fifty miles E.S.E. She was then in a position to receive the wind more and more northerly, and this she would do, if, as is often the case, the storm slackened in its speed. The whole of the phenomena are therefore perfectly explicable upon the ordinary interpretation of the "Law of Storms." All that Captain Miller appears

to have required to set him right on the subject was a competent storm lawyer. How far we have succeeded in that character the Captain himself will be best able to judge. We append a diagram, in which the track of the ship and path of the storm are shewn; the arrows indicate the wind as observed at the ship—they are perfectly in accordance with the "Law of Storms;" the path of the storm is shewn by a continuous line; the broken line marked by a different character to that shewing the track of the ship is intended to represent the line of recurvature in the Indian Ocean—we find it noticed in *Birt's Hand Book of the Law of Storms*, and the present hurricane appears to confirm the conclusions which that author has arrived at, in reference to the locality of recurvature in this part of the world.

Captain Miller's notes leave us in the dark as to one very important particular, the diameter of the *effective* portion of the hurricane. It does not appear to have been very large in comparison with the *non-effective* part, yet it is exceedingly desirable to determine it if possible. The Captain recommends that a ship be made snug beforehand. It may be well to enquire if any thing could have been done to have avoided the *destructive* portion without appearing *un-English* in taking fright at a shadow, or delaying the vessel carrying the mail and tied to time. We think that the undefinable *something* about the weather in the *non*-effective portion—although Captain Miller had often experienced it before *without* a hurricane succeeding—is a clear indication of the existence of one, in fact, is a part of one; and the experienced seaman is not at a loss to know where the nucleus lies. Here then in the case of the *Lady Jocelyn* we have the presence of the cyclone four or five days before it does mischief; about twenty-four hours earlier than the signs of the cyclone were unmistakeable, the royal and top-gallant yards were sent down, and the topsails reefed. It was at daylight of the 5th, the *ordinary* outer gyration was experienced—the "double reef topsail gale;" and from this point the wind increased with fearful violence. All our experience now goes to prove that the time for making a ship snug for a hurricane is between the single and double-reef topsail gales; after the last, the vessel has entered the *effective* disc. Wind, weather, and general phenomena, will announce if it be desirable to adopt such a course. Had it been done on board the *Lady Jocelyn* Captain Miller is of opinion less damage would have been sustained.

But could not the course of the ship have been altered consistently with the service she was upon? With the wind veering round to the north, the unmistakeable hurricane weather and the certainty that the *destructive* nucleus was getting more and more westwardly of her, it appears from the notes of Captain Miller, combined with the diagram we have constructed from those notes, that standing a very little more to the west than the track marked down would most probably have carried the *Lady Jocelyn* northward of the nucleus, and nothing would have come of the remarkable weather. As the wind drew more to the north, the ship's head could have been directed more to the west; and if with this manœuvre the barometer should still have been found to fall, Captain Methven's plan of waiting or standing a little to the



The dotted line shows the track of the ship.

The continuous line the track of the storm.

The arrows the direction of the wind at the ship.

The interior shaded circles the extent to which the ship was involved.

The curved broken line across the diagram the line of recurvature in the Indian Ocean.

eastward *at first*, the indications of recurvature being evident, would quickly have relieved the vessel. As the case turned out the *Lady Jocelyn was compelled* to drift to E.S.E., after having run with the recurvature of the storm. The two precautions combined—making the ship snug, and gently edging away *from the centre* when the increasing wind indicates that the vessel is approaching the nucleus, are doubtless important proceedings in the neighbourhood of the line of recurvature in the Indian Ocean.

The splendid qualities of the *Lady Jocelyn* as a sea-boat must tend greatly to increase confidence in the G.S.S.S. Company's steamers. She is evidently one of a very superior class, fully fitted to *compete* with the hurricane, and requiring but little in the way of dodging to avoid disastrous consequences; penetrating as she did to the very heart of the cyclone she rode out the storm gallantly, not a spoonful of water was shipped on deck, and not a squeak was heard below. Had Captain Bird been aware, but a short time earlier, of the proximity of the disastrous nucleus, and acted in the same manner as Captain Hall, (formerly of the *Black Nymph*,) who made all snug on a fine afternoon, securing his top hamper, &c., while yet the single reef gale lasted, doubtless the *Lady Jocelyn* might have passed through the centre and met with any wind skimming around the calm, without the loss of a spar or rope's end. She affords a fine comment on Captain Methven's text:—"Our ships are now very superior—when we cannot dodge, enabling us to compete with the cyclone."

O.

CHINA.

REMARKS MADE ON BOARD H. M. S. ESPIEGLE, DURING HER PASSAGE UP THE YANG-TZE-KIANG RIVER FROM WOOSUNG TO NANKIN.

Between the 26th March and 7th April, 1848.

THE Blonde Shoal,—about ten miles above Paou-Shan, is the first difficulty met with; to avoid which, it is advisable to keep as near as possible, in a small vessel, in your own draft of water, (2½ fathoms,) on the southern bank, as by hauling off and deeping to 3 fathoms we grounded on it. It was then low water, and there was only 2 feet on its shoalest part.

It appears to be composed of a bed of rocks, covered with mud; the banks of the river on both sides present such a sameness in appearance that there is no possibility of giving any leading marks for them. The bearings (while aground) of the extremes of the land, on the south bank, carefully taken with an azimuth compass, were from E. 49° S. to W. 42° N. The whole of Tsung-Ming to Point Harvey is the same—low, flat, unremarkable land. When nearly abreast of the *broad opening*, (5 or 6 miles to the southward of Point Harvey,) it showed plainly, and several small junks appeared passing through it.

On nearing Point Harvey, it is necessary to notice that the Point itself is low, and without trees on it; and to fix upon some particular object before abreast of it, to mark the spot, to keep in a proper bearing, (S.E. by E.) in shaping a course to the westward. By not being prepared for the difficulty in making out the Point, a vessel will be liable to be set by the flood on the banks to the northward, particularly if the weather is the least hazy.

Single Tree, on the south bank, is a tree at this season apparently withered, and about half its height from the ground spreading into two branches, and having a forked appearance; but not so high, is to be seen another tree, of a withered appearance, close alongside it to the eastward.

Great Bush is a cluster of tall trees, with thick foliage. Between Plover Point and Foo-Shan, in the middle of the channel, we had shoal water, (3¼ fathoms,) Lang-Shan Pagoda bearing N. by E. ½ E., and the second from the eastward at Foo-Shan, with some buildings on it, W. ¼ N. Running with a fair wind, we endeavoured to deepen our water, first by hauling up to the northward, but shoaled to 2½ fathoms; by keeping her directly across the channel to the southward, we deepened to 8 or 9 fathoms. Lang-Shan Pagoda will be easily known; it is on the summit of one of three hills, which when seen from the southward and eastward, (S.E.,) appear nearly as one. The whole of the surrounding country, as far as the eye can reach, is one unbroken flat.

At Foo-Shan there are four very low remarkable hills, the easternmost is the smallest, and at a distance not easily made out. The second hill, the next close to it, is higher, and there are some houses on it. This hill, together with Lang-Shan Pagoda, are excellent marks for passing over to the north side of the river. This part of the river is called the *Foo-Shan Crossing*. A difference between the depths found, and those on the chart, is to be expected, but having worked the vessel across, I consider, by close observations of the cross bearings, the banks may be easily avoided.

On reaching the north bank, from thence westward, the navigation is rather precarious from the great breadth of the river (the south bank not being visible,) the want of landing marks, and the *channel* being much contracted. In returning down this part of the river it happened to be dead low water, the banks on both sides being uncovered in many places to the height of from 5 to 9 feet; it was also uncovered in places where 2 and 3 fathoms are marked on the charts, and in one part where Kea-Shan Hill bore to the south-westward of us, the channel was visibly contracted to less than three-quarters of a mile; when to the westward of Kea-Shan we frequently shoaled to 3½ fathoms, and although we yawed from side to side close to the banks we seldom deepened to more than 5 fathoms, until we got well to the eastward of Kea-Shan. From the unfavorable state of the weather, being mostly thick, drizzly and raining, we were unable to make any observations, such as the opportunity would have offered or afforded had the weather been clear, and allowed us a view of distant objects. Inside the banks, on the north side of the channel, there appeared even at the *low* ebb of the tide a channel used by some small junks, their hulls

being nearly hidden by the uncovered banks between us. In coming up, after leaving the Foo-Shan Crossing, the right bank may be kept pretty close on board, (as the chart indicated,) but several fathoms less water than is marked will be found.

When Kea-Shan bears about W.S.W. I consider it best to increase the distance from the north bank, and gradually borrow towards the south side of the channel until you are to the westward of Kea-Shan. We anchored near the north bank in 22 fathoms of water, Kea-Shan bearing S.W. by W. ½ W., Lang-Shan Pagoda S.E. by E. ½ E., and the east end of a low flat patch, to the southward, S. ½ W. Kea-Shan will be easily known; it appears when first seen from the eastward like a small round knob of land; all the land in its vicinity is very flat and low. Koo-Shan is a small low hill, with some houses on it, not easily distinguished if the weather is at all hazy. All the hills marked on the chart on the south bank will be easily known as far as Keang-Yin-heen: the low one forming the point of the river, opposite the south point of Yin-Shan, kept on a S.W. by W. ¼ W. bearing, though a distant, is a tolerably good mark, for leading between the Cornwallis shoal and the banks to the northward; the west extreme of the range of hills on the south bank, which bears S.S.E. from Koo-Shan, will serve as a good mark also; a cross bearing of Koo-Shan will show when you are near, and when past it. The Cornwallis shoal is the small bank on the south side of the channel, marked with 1½ fathoms on each end of it, bearing from Koo-Shan E.S.E nearly; we saw it completely uncovered.

Proceeding up the river, the south end of Starling Island and Hwang-Shan will become visible; by keeping the latter not quite on with the south end of Starling Island, but rather to the southward of it, it will lead you right up to it, clear of the banks which project from the north side of the channel.

Starling Island is long, exceedingly low and flat—the southern part is wooded and populated, but the northern part is an extremely narrow low slip of land, that will, judging from appearances, in all probability, be swept away at the first time of any unusual swelling of the river. The north extremity for about a mile has already disappeared,—which I found by transit bearings both on going up and coming down,—the present bearings of the north extremity of the Island from Hwang-Shan hill, being E. by N. ½ N. (by chart it is N.E. by E.) and instead of there being 12 fathoms close to, it is rather shoal, and should be given a berth at low water of at least half a cable; all the rest of the Island from its south point upwards we found bold; when abreast of the eastern entrance to the Shaydon River it appears difficult to proceed, the chart showing a blank without any soundings, and instead of one small Island only appearing on the right hand, there are three large ones visible, with houses, and numbers of rush huts thickly studding the Islands all over; they extend as far north as an E.N.E. bearing, from the north point of the eastern entrance to the Shaydon River. On the chart deep water (13 fathoms) is marked near the north point of the Shaydon River, but we found only 4 or 5 fathoms, and deepened our water by hauling more towards the Islands above-

mentioned. After passing this place, keep toward the right bank of the river, (taking the precaution not to come too near the northward extremity of these Islands, in the event of any spit growing up in a northern direction,) until Choo-Shan Pagoda (which will soon be seen over the land and recognised) bears nearly west, when the left bank must be immediately crossed over to; you will then be to the westward of the long shoal marked with ¼ fathom on it, but which was visible to us full 6 feet above the water, a mile in extent. This shoal is called after the *Jupiter*, which grounded on it. Proceeding onwards, there are apparently no obstructions to the navigation of the river, until past the western entrance of the Shayaon-ho. In the channel nearly due west from the Choo-Shan Pagoda, a sunken rock is marked on the chart, it was visible to us about 7 feet above the water, and had a pole fixed on it; it lies about a cable's length from the eastern shore, and abreast of a small hill on the same side. There is anchorage along the north side of this channel.

Seaou-Sha Island is extremely low and flat, without trees or habitations of any kind on it, and I should consider frequently inundated. To the southward and abreast of its eastern end there is, I believe, a shoal extending from the southern shore to within a cable's length of this part of the Island, and on which H.M. ship *Calliope* grounded. It is said there is only 9 feet of water on it.

Silver Island.—We passed up and beat down to the southward of this Island; less depths will be found than marked on the charts, and very unequal; going up, the point on the south or left bank may be rounded pretty close, but just within it, abreast of the Island, it shoals. Borrowing close to this side to weather the west end of Silver Island, we shoaled to 3½ fathoms, for several casts. Off the west end of Tasha is a bank which we shoaled on, working out.

Marion Rock.—Proceeding on past Golden Island, there is a sunken rock, marked on the chart close over to the northern shore; it lies however directly mid-channel, and in a direct line between the west point of the creek on the south bank, and the most elevated and most remarkable part of the bank on the north shore; it has been built upon by the Chinese, and now shows 4 or 5 feet above the water. I observed a white-washed mark on the rocks below the Pagoda on Golden Island; and after passing the rock, we brought the Pagoda and this mark in one. It then appeared in a direct line over and on with the rock, and appears intended as a mark for it. On our return down, by keeping the Pagoda open to the right of the mark, we passed close to the southward of it.

Pi-Sin-Chou Island.—Midway between the eastern point of this Island, and on the north side, is a bank uncovered, 3 or 4 feet above the water, with apparently a navigable channel, used by the junks, on either side of it; we stood near it, and tacked in 15 fathoms of water, not far from it. Along the S.E. side of this Island (Pi-Sin-Chou) are several banks, which uncover at low water; they lie parallel to the shore a short distance from it, and are steep.

After passing E-Ching, there are some remarkable hills;—first, a range marked on the chart as stretching to the N.W., but also to

the N.E. Next, westward of them, are two conical hills, with some table land at the back.

A very little further west is a remarkable table hill. Westward of the creeks at E-Ching there are some shoal patches near the north shore, on the side of one of which we anchored during the night, the wind failing us; the weather next morning was too hazy to observe any bearings to get our position, but I sounded during the night,' and found 4 fathoms about half a cable from the shore—rocky bottom.

Off the mouth of the creek on the north shore, and S.E. by E. from the two hills, we had some shoal casts, over a rocky uneven bottom, extending to the southward one-third of the way across the river; we tried to pass through the creek which leads to the southward of Tsa-ou-Shan, or rather Tsaou-heau-hea Island, but advancing about one-third the distance were obliged to retrace our steps, finding only half the depth of water mentioned in the chart. It is a very narrow channel, a longer vessel than ourselves would have been obliged to have returned the best part of the way stern foremost. Off the N.E. side of Tsaou-heau-hea Island a shoal extends full one-third of the way across the river. Its northern edge uncovers for about three cable's length in a direction parallel to the shore; when abreast of the centre part, Nin-gan-shan Pagoda bore N.N.E. ¼ E. The Island has pretty deep water close up to it to the eastward of this shoal.

From what has been observed I consider it evident that there is at this present time full 15 feet less water than usual in the river.

After passing above Choo-Shan Pagoda we never felt any upward stream of tide, although there was the usual rise and fall. There was sometimes a short period of slack water before high water, but rarely. The usual strength of the tide downwards was from 1½ to 2 knots.

H. R. Elliott, Master R.N.

EMIGRANT SHIPS.

The Report of the Select Committee of the House of Committee on Emigrant Ships being now published we lay before our readers such portions of it as will convey a general idea of the changes recommended, arising from the evidence on which the Report is founded:—

CAUSES OF DISASTER.—1. IRON CARGOES.

In estimating the causes of the frequent disasters to emigrant vessels the effects of iron cargoes require a prominent consideration. That a larger number of accidents have occurred to vessels so laden than to others is incontestable. The returns of the Collectors of Customs, alluded to by Captain Beechey, R.N., in his evidence, and partially quoted by him in his report on the loss of the *Annie Jane*, the remarks of that officer himself in his report, those of Mr. Buchanan, Emigration Agent at Quebec, and the statements of several of the witnesses before this Committee, all tend to establish the fact. The evidence of the Master of the *Annie Jane* is very strong upon this point, showing, as it does, the precautions taken in other countries to lighten the strain of an iron cargo upon a

ship, and not adopted in British ports; as also the inconsiderate manner in which some owners, charterers, or brokers, will load with iron, even against the remonstrances of their sailing-masters.

In the evidence, also, of Mr. Murdoch, Chairman of the Emigration Commissioners, of Captain Beechey, Captain Walker, Mr. Besnard, and Captain Schomberg, the Government Emigration Officer at the Port of Liverpool, as well as in that of other witnesses, there is abundant attestation to the distressing effects of a cargo of iron, and its unsuitableness, at least in any great quantity, for vessels carrying also a crowd of emigrants. Captain Schomberg considers iron "seriously objectionable, especially when carried in such quantities as from Liverpool; and that the mortality at sea is chiefly owing to iron cargoes, as they make the ship laboursome, and cause her to ship a great quantity of water, and probably to leak. The people have then to work at the pumps; and are hard fagged and badly fed."

Captain De Courcey, R.N., Government agent at Queenstown, recommends that the quantity of iron to be loaded in a passenger ship should not be more than in the proportion of one-third of her registered tonnage, or at the very utmost one-half. His evidence on this point entirely corroborates that of Captain Schomberg, and the other parties alluded to.

It is argued by some of the witnesses, that further interference on this score would be injurious to trade; and that the legislature ought not to fetter mercantile enterprise. Also, that if ships be restricted as to cargo, the price of passage will be raised. Your Committee would submit, that security to human life is a paramount consideration to any other, and the evidence is distinct of the want of that security in vessels heavily laden with iron. To use the words of Mr. Murdoch, "all regulations that would promote the health, comfort, and strength of passengers should be established without reference to the effect they will have on emigration."

In reference to the nature of the further restriction to be imposed upon iron freights, your Committee have only to say, that much must, of course, be left to the discretion of the emigration officer; but still some stricter limit than at present existing should be established. At present the Emigration Commissioners instruct their officers, in the absence of any definite enactment, to limit generally such cargoes to two-thirds of the tonnage of the ship. This, of course, is a rule of unequal application, owing to the varieties of construction of vessels, some being considered capable of carrying more than their actual registered tonnage, whilst others would be overladen with only half the amount of their register. Still the fact of such a preponderance of accidents occurring with vessels laden with iron proves that the discretion now left is much too wide.

It requires to be specially remarked, that an injurious and dangerous degree of doubt has been left by the Passengers' Act of 1852 as to the powers of the emigration agent to compel alteration of what he may deem bad or dangerous stowage. The Act is clear (in sect. 26) in giving him power to alter the deck-load; but its very explicitness in this respect renders its silence as to similar alteration below the more significant, and the more likely to cause litigation. The Commissioners, although in much doubt on the subject, have generally approved of their officers assuming to alter the stowage below, as well as on deck; and the local officers themselves have in several cases not hesitated to do so, when they thought their duty required it. But they have been subjected to actions at law for exceeding their powers; and there is quite uncertainty enough about the provisions in the matter to cause additional litigation when the occasion may arise. And so impressed with this fact are they, that instances have not been altogether wanting when those officers have refrained from interfering, though fully impressed with the propriety, if not the absolute necessity, of their so doing. Your Committee would, therefore, strongly recommend that all doubt should be removed upon this subject.

2.—INSUFFICIENCY OF EXISTING MEASURES OF PRECAUTIONS FOR THE PRESERVATION OF HEALTH.

Your Committee have to remark, in reference to medical and sanatory arrangements, that Mr. Murdoch expresses a very decided opinion that the time has arrived for further limiting the number of passengers, who may be carried without

a medical officer on board of emigrant ships; and recommends that, instead of 500 as at present, the limit should be 300. The former number he states to have been adopted, "because it was considered scarcely possible to find surgeons for every ship, and therefore the limit of 500 was fixed;" but "as a step in advance towards putting surgeons in all ships." And upon a subsequent day of examination he adds that, "in some years it may be possible to find the requisite number of medical men for the number of ships," but that, in these matters we must proceed tentatively; and the reduction from 500 to 300 will bring an immense number of ships under the operation of the provision of the Passengers' Act that are not under it now. The evidence of other competent parties tends to confirm Mr. Murdoch's recommendation, as the smallest measure of amendment to be adopted in this respect.

It is stated that too frequently the surgeons of emigrant ships, not chartered by government, are found to be incompetent; and this grave evil is by some witnesses attributed to the difficulty before alluded to, of getting well-qualified persons in that capacity. The Emigration Commissioners, however, have generally been successful in procuring them for their own ships; by the simple agency of good pay, calculated on a scale of progressive increase for every additional voyage made. It will be for the House to consider whether a similar system should or should not be enforced on private ships; and also whether the present system of judging of a surgeon's attainments from a mere examination of his papers by the emigration officer, with the aid, if he think fit, of a medical friend, can be deemed satisfactory.

While upon this topic, your Committee would also call attention to the very important point of devising additional protection for the health of passengers in times of epidemic disease. A very large proportion of the unusual mortality of last autumn in the emigration to the United States was attributable to cholera, then rife at Liverpool, whence the greater number of ships so attacked happened to sail. At present the Emigration Officers at the various ports are instructed not to allow a ship to sail, when the cholera, or other serious epidemic, has declared itself on board. But, as will be seen from Mr. Murdoch's evidence, when questioned in reference to the fact (first stated by the Mayor of Limerick, who had been in correspondence with the Government on the subject), that several vessels left the port of Limerick in April last with cholera on board; the present requirements of the Act are satisfied if there be not a case of illness on the day of clearance.

Your Committee concur with Mr. Murdoch, and other witnesses, in their opinion that power should be given to the Queen in Council, either to stop emigration altogether from ports where dangerous epidemics prevail, during their prevalence, or in case there appear to be circumstances to justify exceptions to the rule, that any ship so excepted should be required to take a surgeon, even though the number of her passengers should be below the limit fixed by law as requiring such an officer.

In considering measures for the prevention of disease, the attention of your Committee has been called to the fact, that the seeds of disease have often been sown among the emigrants by their sufferings from exposure on the decks of the channel steamers which convey them to the English ports of embarkation. The Emigration Commissioners always require cover in channel passages for emigrants coming over to join their ships; and at all times, when troops are sent any distance by sea in the Irish or English Channel, cover is provided for them.

Mr. Besnard, of Cork, cites a case in the port of Cork, where comfortable shelter was provided for this class of passengers without increase of charge; and he does not hesitate to apply the epithet "inhuman" to the general system of taking deck passengers without some such accommodation as he describes. It being suggested to him by a member of the Committee, that, "after all, this (*i.e.* the taking a deck-passage) is a voluntary act on the part of the emigrants," he replies, "I do not consider so: because the order comes from America (where the whole passage is paid) to the parties to proceed to Liverpool to ship; and these people coming from the interior of the country have no idea what a deck passage is, or what they have to suffer." And to later questions, he replies, "I cannot see why Government should not afford the same protection to emigrants proceeding in steamers, as in emigrant ships. I know there is not proper

protection for health or life on the decks of those (channel) steamers. I have seen the emigrants arrive by them at Liverpool and Plymouth in a state that no language can describe; it should be seen to be believed."

Mr. Sylvester Redmond, who states that he has made several passages across the Irish channel, says, in answer to various questions, "I have seen from 100 to 300 passengers exposed on deck; I have seen the sea washing over the deck, completely drenching the unfortunate people. On one morning I saw fifty or sixty people, including five children, perfectly cold and stiff." He cites particular cases, in one of which a boy, and another of which a young woman, were insensible for a number of hours after their sufferings by drenching and exposure on deck. He also mentions, that where deck passengers are admitted to the engine-room, or to deck-houses for shelter in very bad weather, they are made to pay for the accommodation.

It appears by the evidence of Mr. Besnard, Mr. Redmond, Capt. de Courcey, Mr. Watson, Director of the Dublin and Liverpool Steam Company, Constable Duross, and others, that the steamers carrying deck passengers, are also allowed to carry both cargo and live stock, the former occupying the space between decks, that might be otherwise given to the deck passengers, and the live stock under cover as much as possible in deck-houses, and well cared for. The average passage of steamers thus freighted from Dublin to Liverpool is fourteen hours, from Cork to Liverpool thirty or thirty-six hours, from Cork to London three days; and during all that time the cattle and live stock are protected, while the deck passengers for the far greater part are left without shelter or accommodation of any kind on the bare deck.

Although this subject is not within the scope of the Passengers' Act, your Committee would recommend that the practice before referred to of the Emigration Commissioners, in insisting on accommodation under cover for emigrants making channel passages to join the Commissioners' special ships, should be enforced with reference to other emigrants on similar passage to private ships, a regulation which could easily be provided for by the terms of the contract ticket given to passengers. There is a concurrence among several of the witnesses before this Committee in recommending an increase of the space given in the "between-decks" of emigrant ships to their passengers. Mr. Murdoch would enact "that no vessel should give less than the fourteen feet required in American ships, and which is also required now in ships going to British North America without surgeons." Mrs. Caroline Chisholm, whose zeal and exertions in the cause of the poor emigrant entitle her to high respect, speaks strongly upon this point. She states that the present space is not sufficient for health, and that in the ships with which she has had to do, 12 per cent. more space is given to each by the Emigration Society with which she is connected. Captain Schomberg, and competent parties, speak to the same effect; and your Committee are of opinion that the enactment suggested by Mr. Murdoch is most desirable, and therefore recommend it.

Mrs. Chisholm, supported also by Captain de Courcey, Mr. Sydney, and other witnesses, further recommends an alteration in regard to children, to the effect of allowing them, when under fourteen years of age, more space than that given by the present law. By the present law, two children under fourteen are counted but as one person, or *statute adult*, and are allowed only the space of one such adult. Mrs. Chisholm would give the full amount of space of an adult to children above a year old, and half that space to infants below one year, which latter are not contemplated at all under the present law, although she considers that they require at least half space, "even if only two days' old." She gives it as her opinion that "it is want of space more than anything else which has caused so many deaths among children." Captain De Courcey recommends that two children should not be considered as one adult (and thereby be limited to space) above the age of ten years, or even of seven years. Such other witnesses as had their attention called to this point, acquiesced in the recommendation, so far at least as reducing the period of fourteen years to a much lower point. The common ground of these recommendations appears to be in the fact that children stand quite as much (if not more) in need of room to breathe freely, particularly when sleeping, as those who are advanced in years.

Much evidence has been given of the inconvenience of the prevailing system

of fitting passengers' water-closets upon deck, from their exposed position. It not unfrequently happens that they are washed away by the sea in bad weather, especially when they have been constructed in the bows of the ship; and even when entire, the annoyance to females of having to resort to them on the open deck, seems to urge strongly that, at least for female passengers, the rule in force in the government emigration ships, of having closets between decks, should be more generally adopted. At the same time there has been undoubtedly much complaint with reference to closets between decks; and the Emigration Commissioners seem to have found more difficulty in their arrangements on this than on most other points, owing to ignorance or carelessness, or both, among the passengers. Still, as notwithstanding these difficulties, the Commissioners by no means contemplate restricting this accommodation to the upper deck, and as competent witnesses have allowed that the appointment of a special passengers' steward, to look after and keep in order the closets between decks, would lessen the causes of complaint above mentioned, your Committee are of opinion that, in so far as possible, the female passengers, at least in vessels of any size, should have this accommodation, and not have their feelings outraged, and themselves often exposed to actual danger, by having to resort to closets on deck.

With reference to ventilation, your Committee believe that the Emigration Officers at the various ports give as much attention as possible to this difficult yet most important point. Opinions are too much divided even among experienced persons for any fixed rule to be laid down; but whatever may be the system adopted, it would appear desirable that it should in all cases include a raised housing or booby-hatch, as in American vessels, around the hatchways on the upper deck, whereby, in most weathers, windows or scuttles in the lee side of those housings can be kept open, and the extreme measure of battening down the hatches be avoided.

DIET.

In dealing with sanitary arrangements, the influence of diet should, of course, not be overlooked. The Passengers' Act establishes what was intended to be a *minimum* scale of diet, and was evidently so considered by the framers of the Act; as to the very clause that enacts it, there is a provision attached allowing for substitution, at the will of the master of the vessel, of a more nutritious scale. The Emigration Commissioners themselves in their own ships provide more liberally; but in private ships the "*minimum*" has turned out practically to be a *maximum*, and, as such, is not, according to the weight of the evidence, sufficient to sustain health.

It is true that emigrants from Ireland occasionally bring little stores of their own on board; but there is much uncertainty in this casual supply; and the difficulty attending the cooking of it by persons unfamiliar with the motion and usages of a ship, together with the crowd at the "galley" or cooking place, too often renders it impossible, especially for the weak or infirm, to avail themselves of their stores. The keeping of these stores in their berths is liable also to create and increase dirt below, as well as to occupy space needed for other purposes; and the knowledge that additional stores are thus certain to be brought on board, tends necessarily to make the providers of the diet demanded by the law less careful, as they are apt to depend on them to supply any deficiency.

Several private charterers of emigrant ships consider it desirable to exceed the legal scale of dietary, looking upon the latter as decidedly insufficient; and your Committee, taking this into account, and also the circumstance that the Emigration Commissioners themselves go beyond the legal limit in this respect, feel justified in recommending that an addition be made to the dietary scale in the Passengers' Act of 1852, so that it be adequate for proper sustenance, without the necessity of private supply.

SHIPS TAKEN UP FOR EMIGRANTS.

The evidence is general against the employment of very large ships, especially those which stow their passengers upon more than one deck, meaning thereby the main and lower decks, and not the upper deck, even when fitted with deck-houses for additional accommodation. The grounds of objection to a second passenger-deck below are obvious, from the difficulty of thorough ventilation, and

the aggravation of all the inconveniences and evils which necessarily attend the carrying of emigrants under even the most favourable circumstances. Mr. Murdoch has distinctly expressed the determination of the Emigration Commissioners not again to charter vessels with two passenger-decks; and the increased rate of mortality to which he and others testify as having occurred in such vessels in the Australian voyage, shows strongly the propriety of this decision, and the advisability of its being generally adopted and enforced.

"Deck-houses," that is, temporary cabins, built on the upper deck, for the accommodation of emigrants, are open to peculiar objections. In the first place, they are very liable to be damaged or carried altogether away in bad weather, especially in a vessel laboursome from the nature of her cargo, or other causes; and, in all cases, they tend to deprive passengers of much space that would otherwise be available for exercise, so necessary to their health, when long cooped up on board a ship.

In selecting ships for their purposes, the Emigration Commissioners confine their choice of vessels classed at Lloyd's as much as possible to the vessels that rank in the two highest classes, and take no vessel below them, unless after a careful examination and certificate from their officers that she is seaworthy, and fitted in all respects for the intended voyage. In the private emigration the same stringency is not practised, although a similar survey and certificate are required from the Government Surveyors; and although the local officers appointed to examine emigrant ships have on the whole been proved to have done their duty, yet it has happened, that vessels with emigrants have proceeded to sea which there is reason for believing would not have been taken up by the Commissioners for their emigration.

MANNING.

There is an important difference between the conditions insisted upon by Government, when engaging vessels, and the conditions observed in the private emigration:—

Four men to the 100 tons are insisted upon in Government vessels, and not in the private ships. This point is one of much difficulty. Recently the Emigration Commissioners issued a regulation enforcing it on all vessels in any way under their surveillance, but had to suspend its operation, owing to the strength and urgency of the remonstrances made against it. It is urged that there is great difficulty in getting the number of seamen which would be so required, and that where they could be procured they would be sure to leave the ships when arrived in America, or could only be retained by wages so high as materially to enhance the expenses of emigration. It is also urged that the American vessels in the passenger trade are seldom sailed with even so many as three seamen to the 100 tons. In the case of American ships, however, it is to be remarked that they are ordinarily fitted with a great number of additional "purchases," or mechanical helps to labour, which go a good way in supplying the want of men, but which do not prevent the scanty ships' companies from being overworked; and any fear from American competition would be obviated by the necessity which American ships would be under of complying with British regulations when sailing from British ports.

Mr. Murdoch states that the rule of four men to the 100 tons is always insisted on by his Board in the Australian emigration, they being of opinion that "a strong crew is one of the elements of safety." He adds, "that he sees no reason why the vessels in the American passage should not be as well manned, except that it increases the expenses." Against the disadvantage, however, of an increased expense, there is not only the great counterbalancing consideration of increased security for human life, but there are also strong grounds for believing that the clearly-proved determination of the parties in America from whom such large remittances are constantly coming to Ireland to bring their friends out at any cost, will not be in the least abated.

The stormy character of the Atlantic Ocean at all seasons of the year, and the frequently-recurring stories of disaster and wreck, tend to give great importance to the consideration of what shall be deemed a sufficient rate for manning vessels to which the safety of so many hundred lives are entrusted. It may at the same time be observed, that no addition to their numbers can com-

pensate for the want of practical skill and efficiency in the seamen. Your Committee would therefore recommend that great attention should be paid by the Emigration Officer in ascertaining the efficiency of the crew.

Some of the nautical witnesses have spoken strongly in favour of compelling a certain proportion of apprentices to be taken as part of a ship's crew; and this they recommended mainly on the ground of the present scarcity of good seamen, and the advisability of training up boys in time.

SEAWORTHINESS OF SHIPS.

The seaworthiness of passenger ships is another consideration of importance. The precaution now resorted to is that of inspecting a vessel before she puts to sea; but it may be worthy of consideration whether there would not be an advantage in requiring the Master of the vessel, under penalty in a bond, to note down in his log the sailing and sea-going qualities of his vessel from the moment of sailing; and in case of discovering, ere leaving the land, that she was unhandy, or otherwise likely to prove unfit for the voyage, to return with her, either to the port he sailed from, or such other as he might deem more convenient, to report the circumstances to the Emigration Officer there, and to take all necessary measures for their amendment; and it is also worthy of consideration whether an untried vessel of extraordinary construction should not have her capabilities tested before proceeding on a voyage with emigrants.

The reports of Captain Beechey, R.N., and Captain Walker (made to the Board of Trade, and recently presented to the house), upon the melancholy loss of the *Annie Jane* and the *Tayleur*, render it unnecessary for your Committee to enter upon the details of those cases; and they, therefore, refer to the reports in question, as containing much that will be found to corroborate the recommendation they have thought proper to make.

The exceedingly important question raised in the case of the *Tayleur*, as to the extent and degree of the disturbing influence that iron, whether in the construction of a ship or as forming part or the whole of her loading, has been found to exercise upon the accuracy of her compasses, remains unsolved, your Committee not having found much agreement of opinion amongst those who might be considered competent judges. No sufficient reason, however, appears to have been given why the *Tayleur* was not put through the usual operation of being swung for the comparison and adjustment of her compasses, after she had received her large cargo of iron, nor why the usual "table of errors," in reference to the results of her first "swinging," previous to receipt of cargo, was not supplied, to assist the captain in his correction of her courses. There being no doubt at all that iron must disturb the accuracy of compasses (whatever may be the degree in which it so does), and the consequences of such disturbance being so notoriously lamentable, it appears to your Committee that it should be rendered compulsory on Owners and Charterers of vessels to observe, to the strictest point, the measures which are in use for a proximate correction of the disturbance, even although scientific men be not agreed as to the entire efficiency of those measures.

NUMBER OF PASSENGERS.

Your Committee recommend, in reference to the number of passengers allowed by the Act to be carried in one vessel, that it should not, except in special cases sanctioned by the Emigration Commissioners, exceed 500; and they are fortified in this by the opinions of Mr. Murdoch, Captain Schomberg, and other officers experienced in emigration. They further recommend, that the sections 3 and 4 of the Passengers' Act, whereby vessels carrying no greater proportion of passengers (*i. e.*, steerage passengers) to her tonnage than four to the 100 are exempted from several important provisions of the Passengers' Act, should be amended. Vessels with only the proportion just mentioned are technically denominated "short ships," and not coming under the regulations which limit the quantity of cargo cases have occurred of great suffering to their passengers from the want of proper accommodation. We would recommend that a vessel be brought within the scope of the Passengers' Act where the number of passengers on board is in the ratio of two to the 100 tons.

It is right to state that Mrs. Chisholm and some others, who have given it much attention, are of opinion, that nearly all the existing excepted cases in the Act, whether as to "ships" or "passengers," should be done away with; and

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that in reference to "passengers," the distinction between those in the cabin and those in the steerage is particularly objectionable, inasmuch as cabin passengers are found to be as helpless on board ship, and really quite as much in want of protection, as the poorest of those in the steerage.

While on the subject of the ships which should be brought within the operation of the Act, your Committee would observe, that there is a present exemption from such operation of "any steam vessel carrying royal mails, or carrying mails under contract with the government of the country to which such steam vessel may belong." It was explained by Mr. Murdoch, that when the present Passengers' Act was introduced into parliament there were no steam vessels employed in the carriage of passengers, and the object of the clause was to prevent interferenee by the Emigration Officer with any of the steam vessels under permanent contract with the government (such as Cunard's and West India packets), in the event of their happening to have on board a number of steerage passengers. The clause has, however, been so interpreted as to exempt all steam vessels having a Post Office bag on board; and as steam vessels are now largely employed in the carriage of passengers both to America and Australia, it is very desirable to limit the restrictions, according to the original intention, to Post Office steam packets only.

RUNNERS—LODGING—DETENTION—ETC., OF EMIGRANTS.

The regulations adopted on the recommendations of the Committee of 1851 for the protection of emigrants while waiting for their ships, especially the restrictions thus enacted upon the persons called "runners," who, in fact, made a prey of the poorer emigrants, seem to have operated very beneficially; but, according to the evidence of Mr. Besnard, Captain De Courcey, Mr. Redmond, and others, something more is required to be done in this respect. Your Committee would recommend that these runners should all wear "badges" under police regulations, so that misconduct may be the easier traced. They further recommend that all Ship-brokers or Charterers employing such parties to get the emigrants to their ships shall be compelled to send in to the chief Emigration Officer at the port at the beginning, or not later than the 5th of each month, the lists, with the names and description of these "runners," which, by the 68th section of the Passengers' Act of 1852, he is compelled to give in monthly, but which is frequently not given in till the last day of the month, when it often happens that the engagement of the "runner" is terminated.

The present "detention money," allowed by Ship-charterers for the support of emigrants during the detention of their ship after the day of sailing originally fixed, is one shilling per head for every adult. This sum appears by the evidence to be barely enough to sustain life, and where the delay is of any duration, health is found to suffer from insufficient sustenance. Your Committee recommend that the money so to be allowed should be increased to 1*s.* 6*d.* per day for adults, and 1*s.* for children under ten years of age.

The evils of emigrants' lodging-houses, noticed by the Committee of 1851, have in some degree been corrected; and, probably, as much so as is practicable, while the system of private lodging-houses subsists. Your Committee are of opinion that the depôt-system, which is favoured and adopted by the Emigration Commissioners, should be generally established. The Committee of 1851 reported in favour of the establishment of an "Emigrants' Home," or "Depôt," towards the maintenance of which each contract-ticket should include a payment of from one shilling to two shillings; such depôt to be under the management of the local authorities of the port of embarkation. The Committee of 1851 add, that a plan of this nature, previously tried in Liverpool, failed, owing to the opposition of private interests. The present Committee suggest a renewed consideration of the subject.

Some witnesses have suggested the expediency of causing one-half of the passage-money received by Ship-brokers and Charterers to be lodged to the credit of the Emigration Commissioners, until report of safe arrival of the emigrants at their destination; such deposit to be liable to partial or total forfeit, in case of accident, resulting from defective or bad arrangements. Mr. Murdoch thinks all the purposes proposed to be served by this system are sufficiently met by the penal bond into which those parties are at present compelled to enter.

BOATS.

The number of boats prescribed by section 44 of the Passengers' Act to be carried by emigrant ships appears to be sufficient: and your Committee have no reason to believe that the Emigration Officers at the various ports to whose discretion it is left to judge of the fitness of these boats have not exercised that discretion judiciously. The difficulty, however, that in most cases of emergency at sea has been found to attend the hoisting out and lowering of boats of the usual construction, seems to point to the necessity of testing some of the new patented inventions, which are asserted to offer the combined advantages of easy stowage in a small compass when on board; great lightness and handiness in lowering under almost any circumstances; capability of being constructed of any required dimensions, without losing the two first-named qualities; and finally, greater safety when in the water than wooden boats of any construction are capable of giving. Two plans of such inventions have been before your Committee, one invented by the Rev. E. Berthon, of Fareham, (a report of which by the authorities at Portsmouth is included in the Appendix) and the other by Mr. Parratt, jun., of the Treasury, in favour of whose invention a report from the Assistant to the Surveyor of the Navy, made to the Lords of the Admiralty, was laid before your Committee.

With reference, however, to these and to other inventions, such as that of a metal cask to obviate the evils attendant on carrying water on board ships in wooden casks, and having the recommendation of being easily taken to pieces and stowed away, when not in use, plans of life-belts, or floats, &c., your Committee have considered that it did not come altogether within their competency to pronounce upon them. They have accordingly referred all such matters to the Emigration Commissioners, with a strong recommendation that those gentlemen should give them every attention—the present means of saving life in cases of total wreck, even where the full number of boats is provided, being proved by experience to be inefficient: and your Committee are impressed with the desirability of emigrant ships carrying a portion at least of their water in iron, which recommendation is supported by evidence.

GENERAL REMARKS.

Your Committee cannot conclude without again recommending that her Majesty's Government should endeavour to obtain the co-operation of the United States in an amended Passengers' Act, to be enforced in the United States' Courts, and in the case of vessels arriving in their ports. This was one of the leading suggestions of the Committee of 1851, and subsequent experience has only made it more clear that in no other way can an effectual control be obtained over passenger ships, especially foreign ships, on the voyage from this country to the United States; for whatever misconduct may occur on the voyage, it is scarcely possible to obtain legal evidence of it on the return of the vessel to this country; and, therefore, the only chance of punishing such misconduct is by proceedings at the port where the vessel arrives, and where the witnesses are collected.

July 5, 1854.

GREAT CIRCLE SAILING AND CLIPPER SHIPS.

[*To the Editor of the Mercantile Marine Magazine.*]

SIR,—In reference to a letter in your valuable Magazine for June, I beg to remark that the intention of all such correspondence should be the advancement of science, and the worth of anything propounded can be estimated by the *good effect* intended. Now let it be admitted that Mr. Towson has been of great service in proposing and urging the scheme for the adoption of the Composite Course, and merited the esteem and gratitude of many, some of them certainly well-informed,

navigators, any argument insinuated to controvert his principle must engage much attention and criticism. Let us see how the "London Shipmaster" opens up his chapter of doubts and difficulties by an admission that preserving the parallel of latitude is obsolete, for he speaks of it as having been "formerly practised," and the other (or the composite), as a "manœuvre;" now Mr. Towson does not enter into the respective merits of ships by the wind or otherwise, but only proves which is the shortest road; for instance, Captain Forbes did not manœuvre when he studied "the shape of the globe," for his evident intentiou was to profit by the shortened distance and not by the superior sailing of his ship, so that the insinuation regarding his making up for loss of time cannot refer to such a case at all, as here fast ships have the advantage they ever possess.

The tabular scheme, proposed by your "London Correspondent," must ever meet with difficulty and contain doubt if Australian Ships' Log-Books are as wide of the truth as he insinuates. The statement that the *Elora* can go ten knots we can believe, and that she would waddle along also; but the speed to be attained by a modern clipper (evidencing how science has triumphed over prejudice) is not so easily credited from its great contrast with ancient instances; but the race recommended here is not to the swift alone—but merely the shortest road; and the Composite Course to be adopted only when practicable. By the examples given in the table of your Correspondent it appears the *Marco Polo* did follow the Composite Course, and performed the passage in a less number of days—the average mean speed being in excess also.

Mr. Towson has the same knowledge (in a high degree) others may have of spherical trigonometry and is much too modest a man to "seize the heroic trumpet," or "spout" any "exclusive science."

Probably your "London Correspondent" would find from experience that he had as little time to spare going 25 knots an hour, as in the *Elora* when less would be required of him; and if he cannot get the truth regarding the speed of modern ships, let him be satisfied with his admiration of the "sancy faces" of the old ones and speak respectfully ("setting down nought in malice") of modern science.

I am, &c., A LIVERPOOL SHIPMASTER.

TO FIND THE POSITION AT SEA.

MARCH 1st, 1854, P.M. at ship: shortly expecting to make the land, night approaching, and having previously run several days without observation. The ship's place very uncertain, but supposed to be somewhere between the parallels of 52° and 53° N., and between 5° and 6° W. long., the sun's true central altitude was found to be 11° 25′ 6″: M.T. at Greenwich by lunar or chronometer (corrected), $1^d\ 4^h\ 32^m\ 35^s$. It is required to establish from the above data the true latitude and longitude of the ship, also the error of the compass.

Greenwich mean date, March, 1ᵈ 4ʰ 32ᵐ 35ˢ. ☉'s P. D. 97° 31′ 5″ Eq. of time + 12ᵐ 35ˢ to appᵗ time.

FIRSTLY.

To find ship's long. supposing the lat. to be 52° N.

☉'s true alt....	11	25	6		
lat....	52	0	0	secant...	0·210658
P. D.	97	31	5	cosec ...	0·003749
Sum	160	56	11		
½ ditto......	80	28	5·5	cosine...	9·219054
Rem.	69	2	59·5	sine ...	9·970296
Apparent ship time	4	1	47	=	9·403757
eq.	+	12	35		
Mean ship time ...	4	14	22		
Greenʰ mean time ..	4	32	35		
Long. in time... =	0	18	13	=4° 33′ 15″ W.	

SECONDLY.

To find ship's long. supposing the lat. 53°.

☉'s true alt....	11	25	6		
lat.	53	0	0	secant...	0·220536
P. D.	97	31	5	cosec ...	0·003749
	161	56	11		
	80	58	5·5	cosine...	9·195853
	69	32	59·5	sine ...	9·971729
Apparent ship time	3	58	9	=	9·391868
eq.	+	12	35		
Mean ship time ...	4	10	44		
Mean Greenʰ time	4	32	35		
Long. in time	0	21	51	=5° 27′ 45″ W.	

THIRDLY.

To find the sun's azimuth.

Lat.	52	M. P.	3665	Long.	4° 33′ 15″ W.
Do.	53	Do...	3764	Do. ...	5 27 45 W.
	1		99		54 30

As mer. diff. latitude = 99 log. 1·995635
Is to diff. longitude ...... 54·5 log. 1·736396
So is rad......................... 10·

To tangent azimuth co. 28° 50′ 1″ = 9·740761

S. 61° 9′ 59″ W.
N. 118 50 1 W.

FOURTHLY.

Given polar distance, zenith dist., and azimuth angle.
To find the polar or hour angle.

As polar dist. =	97	31	5...sine...	9·996250
Is to zen. dist. =	78	34	54...sine...	9·991344
So is azimuth =	118	50	1...sine...	9·942516
To hour ang. =	60°	1′	5″...sine...	9·937610

Appᵗ ship time	4ʰ	0ᵐ	4ˢ	20″
eq. time	+	12	35	
Mean time at ship	4	12	39	
ditto Greenʰ	4	32	35	
Long. in time ...		19	56	= 4° 59′ 0″ W.

To find the variation.

☉'s true bearing S. 61° 9′ 59″ W.
Magnetic do. S. 81 10 0 W.

Variation ...... 20° 0′ 1″ W.

FIFTHLY AND LASTLY TO FIND LATITUDE OF SHIP.

As ½(Az. − H.A.) = ½(118 50 1 − 60 1 5) = 29 24 28 sine 9·691101
Is to ½(P.D. − Z.D.) = ½(97 31 5 − 78 34 54) = 9 28 5 tang. 9·222117
So is ½(Az. + H.A.) = ½(118 50 1 − 60 1 5) = 89 25 33 sine 9·999978

tang.... 9·530994

To ½ co-latitude	18	45	32	
			2	
	37	31	4	co-latitude.
	90			
	52	28	56	latitude.

We have been favoured with the preceding solution by Mr. M'Diarmid, of Liverpool; the true position of the ship does not differ from that computed by this method in the present case more than 1′ of lat. and long.

HONORARY REWARDS.

Testimonial to Capt. W. Escott, (July 1st).—The passengers by the ship *Maidstone* have presented to Capt. W. Escott a tea service, as a memento of their regard and esteem for his kindness to them during the voyage, and for the skill and coolness evinced by him in the management of the ship under many trying circumstances during the voyage.

Testimonial to Capt. Bruce, late of the ship Hibbert.—Mr. James Aikin, Chairman of the Local Marine Board, Liverpool, has presented to Capt. Bruce, on behalf of the King of Holland, a gold snuff box. The box, which is elegantly chased, is enclosed in a morocco case, and bears the following inscription:—"From his Majesty the King of the Netherlands, to Capt. Bruce, late in command of the ship *Hibbert*, for rescuing the crew of the Dutch ship *Laura* and *Adele*, burnt at sea, 11th October, 1852."

Testimonial to Capt. M'Veigh, of the ship Golden Spring.—We have much pleasure in stating that the underwriters in Mr. S. H. Smyth's Marine Insurance Office have presented Capt. Thomas M'Veigh, of the *Golden Spring*, with a valuable gold watch and appendages, together with a purse of gold, in testimony of the high sense entertained by them of his prompt and gallant conduct in saving the barque *Victoria* from total loss at Port Philip Heads on the 24th of November ult. The following is the inscription engraved upon the watch:—"Presented by the underwriters of Mr. S. H. Smyth's Sydney Marine Assurance Office to Capt. Thomas M'Veigh, for prompt and valuable assistance rendered by him in rescuing the barque *Victoria* (Packet) from imminent danger when stranded at Port Philip Heads on the 24th of November, 1853." Whilst no such incentives as these are required to stimulate British seamen in their path of duty, however difficult and dangerous, it is nevertheless most encouraging to them to find their friends on shore prompt to recognise and bear grateful testimony to their exertions in cases of peril and emergency.—*Sydney Shipping Gazette.*

Testimonial to Commander A. B. Becher, R.N.—The Lords Commissioners of the Admiralty have directed that £100 be paid to Commander A. B. Becher, R.N., on account of his invention of the *Artificial Horizon* for astronomical observation at sea or on shore.

Creditable Testimonial to a Seaman.—On the outward passage of the ship *Constance*, of Liverpool, for Melbourne, a young lad, of the

name of Sydney Smith, fell overboard, when Thomas Jessyman, seaman, immediately jumped after him and tried in vain to save him, for he had unfortunately gone down. A subscription was raised on board to reward the courage of the sailor, and a handsome sextant was purchased and presented to him by Captain Milward, bearing the following inscription :—"Presented to Thomas Jessyman, by the captain, officers, and passengers of the ship *Constance*, of Liverpool, as a testimonial of their admiration of his brave and humane efforts to save the life of Sydney Smith, when he fell overboard on the 13th November, 1852." —*Liverpool Advertiser.*

The Fishermen who rescued the Crew of the Eva (s) will shortly receive a large and handsome new fishing-boat, of 57 tons register, which has been constructed for them, at an expense of £700, by the trustees of the public subscription raised to reward them. The vessel has been appropriately named the *Eva.—Liverpool Mail.*

CERTIFICATE CANCELLED.

Charges of drunkenness having been preferred against Angus M'Allister, late mate of the John Hamilton, an investigation has been held by the Greenock Local Marine Board, under the 28th section of the Mercantile Marine Act, to inquire into his conduct, and that board having found him guilty of habitual drunkenness, the Board of Trade have, upon the recommendation of the Local Marine Board, determined to cancel his certificate of service.

LEGAL DECISION.

Sydney Police.—*Desertion of Seamen.—Sydney, March* 4.—Seamen arriving in this port from distant countries should be informed of the fact, that by an act passed last session by the Legislative Council of this Colony, a sailor who has deserted from his vessel can, after the vessel has left the port, be prosecuted by the shipping master, and punished for the offence in the same way as if the Captain instituted the proceedings; the evidence of his engagement being the production by the shipping-master of an attested copy of the ship's articles. Further, it is competent for the Magistrate to give permission for the offender in such a case to be sent on board any vessel belonging to the same Owners and proceeding on the same voyage as that from which he deserted, The first conviction under this clause was made yesterday at the Water Police Office, in the case of a seamen named William Crombie, who deserted from the *Waterloo*, which sailed last Sunday, and who was apprehended on Thursday. The Magistrate who passed the sentence said he should deal leniently with the charge, on account of its being the first conviction of the kind, ordering the offender to be imprisoned for one month, with hard labour; he hoped, however, that other seamen would take notice that should he again preside on the bench when a desertion was prosecuted under similar circumstances he should inflict the full penalty of three months' imprisonment. The sailor committed to gaol yesterday will therefore not obtain his liberty on the expiration of the four weeks, but may then be shipped on board the *Nile*, which belongs to Messrs. Dunbar, the owners of the *Waterloo.—Empire.*

CONDENSED LIST OF
CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from June 29 *to July* 29, 1854.

Harbour Lights at Port San Lucar, South West Coast of Spain.—On the 21st of January, the following Lights were established at the Port of San Lucar-de-Barrameda.

1. A fixed Light on Malandar Point, on the north shore of the Port, at an elevation of 36 feet above the sea, and visible at the distance of six miles.

2. A fixed Light in a high building at the northern end of the village of Bonanza, in the interior of the port on its eastern shore, at an elevation of 53 feet above the sea, and visible at the distance of eight miles.

3. A Red Light in an elevated position to the southward of the Castle of Espiritu Santo, the point of which forms the southern limit of the port.

In order to enter this port, the wind being free, a vessel having passed to the westward of the Salmedina Shoal, should steer N.E. ¼ E. for 2¾ miles, when she will be in about 5½ fathoms water, (sand) and will have the two Lights above-mentioned of Malandar and Bonanza nearly in one, the bearings of these Lights should be taken correctly, and the course altered for them to east. Having run 1¼ miles on this course, the Red Light on the southern shore will be seen bearing S.E. ½ E., and when so far advanced as to bring it to bear S.S.W., the vessel will be in the narrowest part of the channel, (which is not two cables across,) and this Red Light will be eclipsed; on which taking place, an E.S.E. ½ E. course is immediately to be steered, until Malandar Light bears N.W. ½ N. and Bonanza Light E.N.E., when she will be in 6 to 8 fathoms water, on sand. She may then steer N.E. ½ E. for Bonanza Road, and when that Light bears S.E. ¾ E. anchor in 4 to 6 fathoms water, on a sandy bottom.

The many rocks and shoals, both inside and outside of this port, render it difficult and dangerous to enter with a beating wind without a pilot; and no vessel should attempt it at night, but keep the sea until daylight, or anchor to the N.N.E. of Chipiona, if the weather should permit. It is high water, full and change, at Chipiona, at 1h. 34m., and at Bonanza at 2h. 0m., and the greatest spring tide range is 12½ feet. The above bearings are magnetic.

Fixed Light at Plumb Point, Port Royal, Jamaica.—A lighthouse has been erected 66 yards north of the south extreme of Plumb Point, on the Palisadoes, immediately opposite the town of Kingstown, Jamaica, in lat. 17° 55′ 45″ N. and long. 76° 47′ W. It is 68 feet above the level of the sea, painted white, and will exhibit on and after the 20th of July, 1854, a fixed light, red from S.E. by E. ¾ E. to S. ½ W.; and the white, from S. ½ W. to N.W. It may be seen in clear weather 12 miles distant.

Beacon Buoy on the Whittle Rock, False Bay, Cape of Good Hope.—On the 31st March last, a Beacon Buoy was placed at the distance of 40 fathoms E. by N. of the shoalest part (11 feet) of the Whittle Rock in False Bay. The Buoy is made of iron, painted red, carries a staff 13 feet long, with a basket, which is visible to the distance of two miles, and is moored in 10 fathoms water, with the following marks, viz.:—

The Upper or Black Beacon, in Buffal's Bay, a little open to the southward of the White Beacon, bearing about W. ¾ S.; and the white-washed mark, seen over Red Hill, a little open to the northward of the Lower Beacon, bearing about N.W. ¾ N. There are several rocky heads, carrying from 4 to 6 fathoms, within the circuit of 40 fathoms from the Whittle Rock.

Stanford Channel.—The Holm Sand in the Stanford Channel, off Lowestoft, having grown out to the southward, the South Holm Buoy has been moved about 1½ cable's length to the S.S.W.; and now lies in 3½ fathoms at low water spring tides, with the following marks and compass bearings, viz.:—

Lowestoft Brewery Chimney, in line with the Low Lighthouse at that place ...	N. ½ W.
Kirkley Mill, open to the southward of the Terrace at Lowestoft	N.W. ½ N.
Stanford Light Vessel	N. by E. ½ E.
East Newcombe Buoy	N.W.

Barrows Sand, West Swin.—A Spiral Buoy, painted Black and White, in Circular Stripes, has been placed on the east part of the Barrows Sand.

The Buoy lies in 6 fathoms, with the following marks and compass bearings, viz.:—

Canewdon Church, on with a small dark building next north of Foulness Church, N.W. by W. ¼ W.

The north end of Wakering Trees, in line with the Maplin Lighthouse, W. by N. ½ N.

Mouse Light Vessel, just open to the southward of the West Barrows Buoy, W. by S. ½ S.

Swin Middle Light Vessel, N.E. by N.

N.E. Maplin Buoy, N.W. ¼ N.

A Spiral Buoy has been placed at the West Barrows Station, in substitution of the ordinary Buoy previously thereat.

NAUTICAL MEMORANDA.

Report concerning a Shoal.—Noon, July 4, lat. 45° 4′ N., long. 12° 9′ W.: 6 P.M., having made 30 miles to the north-east by compass, perceived a shoal, with heavy breakers right ahead; kept away immediately to the east south-east, so as to avoid that dangerous situation. To the best of my knowledge they were extending about a mile to the north-eastward, which I found to be in lat. 45° 32′ N., long. 11° 57′ W. Capt. Lean, schooner *Mary*, from Licata to Liverpool.—*Shipping Gaz.*

Report concerning a Reef.—Capt. Thompson, of the *Acis*, reports having passed near a reef not given in any chart, extending north-east and south-west about three miles, on which the sea was breaking heavily; had good observations, from which he places it in lat. 22° 47′ S., and 171° 48′ 30″ W. The islands of Ohiteron and Rimatem, in the track of vessels bound to Otaheite, are erroneously placed on the charts, the former being 37 miles, and the latter 10 miles W. of their true position, which is—Ohiteron, lat. 22° 28′ S., long. 150° 47′ W; and Rimatem, lat. 22° 43′ S., long. 152° 54′ W.—*Hobart Town Advertiser.*

NAUTICAL NOTES.

The Panama Route to Australia.—Mr. E. H. Hargraves (a passenger by the steam-ship *Golden Age*, from Sydney to Panama) furnishes the following particulars, together with an abstract of the log of that ship, and, as her voyage is the first ever made across the Pacific by a merchant steam-ship, the details are of great interest. The *Golden Age* is an American paddle-wheel steamer, of 3,000 tons burden, and 700 nominal horse-power. Her run out from Liverpool to Australia was the quickest ever made, and the owners have placed her upon the Sydney and Panama route, with a view of testing its capability to support a line of powerful steamers. The *Golden Age* left Hobson's-bay at 1 p.m. on the 5th of May, and anchored at Sydney Heads on the 8th, at nightfall, the vessel being heavily laden with coals. She took her departure from Sydney on the 12th of May, and at 11 a.m. on the 24th entered Papetie Harbour, the distance, 3,411 miles, having been run in fourteen days, the winds prevailing being S. by W. for the first nine days, and E. the remainder. The lowest run in 24 hours was 220 miles, and the highest 272 miles. The ship was burning New South Wales coal (from Newcastle), the average consumption being 70 tons per diem. The stay at Papetie occupied five days, during which 1,200 tons of coal were taken on board from three vessels lying in a safe and good harbour without rollers, the coal being placed on board by natives. On the 30th of May, at 10 a.m., the *Golden Age* left Papetie, having on board 1,400 tons of coal, the ship being very deep, the engines making only nine revolutions, and the current being 1¼ knot adverse. The run to Panama was made in 19 days, at a speed averaging 200 to 270 miles a day, the actual distance traversed being 4,451 miles; wind calm and light from the eastward during the majority of the passage. The course steered was a straight one to Tahiti and thence to Panama, and the ship had to contend with 768 miles of current. About 2,600 tons of coal were consumed in all, the average cost of which, at £4 per ton, was £10,400. With a consumption of 70 tons of New South Wales coal the engines made only thirteen revolutions per minute, whereas with 50 tons of Welsh coals the revolutions attained have been eighteen. The mails have been delivered in Southampton in 66 days from Sydney, all detentions included; but, taking six days for coaling at Papetie, four days detention at Panama, and two days at St. Thomas's,

the actual steaming time has been 54 days from Sydney to England. The freight and passage-money earned by the *Golden Age* was £10,500, and the voyage will, it is said, show a loss of from £7,000 to £10,000, owing to the enormous cost of fuel. Screw steamers, if used on this route, would probably coal in Cook's Straits, New Zealand, and, as they would have more wind in their favour and less current against them, would easily make the run from Sydney to Panama in 40 to 45 days, at an expenditure of coal less than one-third of that occasioned by the employment of the *Golden Age*. Without a mail contract of 10*s*. per mile, it is doubtful if screw steamers would pay their expenses on the line; and it is from this cause that the English company (the Australasian Pacific) hás withdrawn their fine steamers, built specially for the purpose. The experience derived from the voyage of the *Golden Age* is pretty conclusive as to the fact of the Panama route to Australia being the shortest and most direct, and (considerations of expense left out of the question) the most desirable for the transmission of mails. When coals can be provided for steamers at New Zealand at moderate expense, it seems to be likely that the line will be permanently occupied by screw steamers, but till such favourable circumstances are in operation, the Panama route to our South Australian possessions must necessarily be sealed to the mercantile world.

Advance Notes—The new Merchant Shipping Bill will lead to some slight modification in the relation between seamen and Ship Owners. Hitherto seamen engaged in the foreign trade have been accustomed to receive an advance of one or two months' pay, according to the length of the voyage, and they invariably looked to it as the means of fitting themselves out; for it too often happens that even the bed and bedding are parted with, from the improvidence of which seamen are too often guilty. But these advances are not paid in cash, as we believe they are in the United States, but by advance notes—a mode of payment recognised in two or three of our recent marime enactments, which not merely direct the form in which they are to be drawn, but the means of discounting them, and the time and conditions under which they are payable. This was the most unsuccessful piece of legislation the Board of Trade ever attempted. As a matter of course, it has been conducive of constant frauds and litigation. We, from the first, saw that it must be so, and we take some credit to ourselves for having invariably denounced the system as highly objectionable, injurious to the seamen for whose benefit it was intended, fraudulent, in many instances, to the Ship Owners, and to the tradesmen who discounted the notes, and too often a direct encouragement to desertion. It is, therefore, a satisfaction to us that the subject ot advance notes is wholly omitted from the new Bill; but as under the old law it is entirely optional with the Ship Owner to pay his men an advance of wages through the medium of these notes, so the law will still be open to him to act as he pleases. The new Bill does not forbid advance notes, but it does not recognise them. An advance note for seamen's wages will be similar to any other promissory note which a Ship Owner may give to a tradesman or any other person,

aud recoverable in the same manner. But as the ready mode of recovery which the law now gives to the discounter, by summary process before a magistrate, will be no longer available, it is probable that but few persons will hereafter embark in this precarious trade; for it had latterly become very precarious, hedged round, as the section of the last Act is, with so many legal difficulties.

Many of our seamen will, notwithstanding, for a time, expect an advance of wages previously to embarking on a foreign voyage. A system to which they have been so long accustomed cannot be abruptly discontinued; but it may gradually cease, as the men themselves come to know their own resources better, and to feel that they have not so objectionable a mode of payment (for we consider payment in advance to be most objectionable) to calculate upon. A seaman who knows that he is already paid for the work he may have to do, or the labour and fatigue he may have to undergo for the next month or two, cannot set about it with the same spirit as if he had his reward in store for him at the end of his voyage; and the disposition we have latterly observed on the part of seamen to complain of the ship being unseaworthy, and other frivolous pretexts to force her back into a port, has, we fear, been sometimes induced by the system of paying in advance. It enables the crew to pass some part of the time for which they have been paid in advance, in comparative idleness at an anchorage. It is unnecessary to say that this is as detrimental to the interests of the Ship Owners as it is harassing and vexatious to the Commanders.

We suppose that Ship Owners engaged in the foreign trade will still have to pay money in advance to some of their seamen; hence they will have to devise means to make such payments, so as to secure themselves from the frauds which might be attempted on them by unprincipled men. It would be well, perhaps, if some uniform plan could be adopted.—*Shipping Gazette.*

East India and China Shipping.—The following is a comparative statement of the number of ships, British and foreign, with their aggregate tonnage, entered inward and cleared outward from and to places within the limits of the East India Company's charter from the 1st of January to the 30th of June in the years 1853 and 1854. According to the statistics of vessels entered inward, the port of London shows an increase of 75 vessels, with 31,916 tonnage, the difference between 365 vessels and 205,186 tonnage in 1853, and 440 vessels and 237,102 tonnage in 1854. Liverpool exhibits an increase of three vessels with 161 tonnage, the arrivals in the former period having been 129 vessels with 77,319 tonnage, against in the latter 132 vessels with 77,480 tonnage. In the case of Bristol there is an increase of four vessels with 3,157 tonnage, the difference between 23 vessels with 7,826 tonnage, and 27 vessels with 10,983 tonnage. The return for the Clyde gives an increase of seven vessels with 3,644 tonnage, the arrivals in 1853 having been 31 vessels with 11,277 tonnage, and in 1854, 38 vessels with 14,921 tonnage. The total increase presented is 89 vessels, with 38,878 tonnage, the difference between 548 vessels with 301,608 tonnage, and 637 vessels with

340,486 tonnage; while the principal arrivals have been from Mauritius, Madras, New South Wales, Calcutta, Ceylon, China, Java, and Sumatra. The statistics of vessels cleared outward present unfavourable results, owing to the diminished activity of the trade to Australia as compared with the corresponding period of last year. In the case of the port of London a decrease is exhibited of 93 vessels with 19,657 tonnage, the difference between 472 vessels with 218,864 tonnage in 1853, and 379 vessels with 199,207 tonnage in 1854. The return for Liverpool shows a decrease of 68 vessels, with 123 tonnage, the departures in the former period having been 262 vessels, with 134,895 tonnage, and in the latter 194 vessels, with 134,772. The decrease in the case of Bristol is six vessels, with 1,286 tonnage, the difference between 16 vessels, with 4,666 tonnage in 1853, and 10 vessels, with 3,380 tonnage in 1854. The Clyde figures for a decrease of 22 vessels with 749 tonnage, the departures in the former period having been 81 vessels with 29,566 tonnage, and in the latter period 59 vessels with 28,817 tonnage. It will be noticed in these instances, that although the number of the vessels has decreased, the aggregate tonnage, except in the case of the port of London, has not proportionably diminished—a circumstance showing that a larger class of ships is now generally employed. The net decrease is 189 vessels with 21,815 tonnage, the difference between 831 vessels with 387,991 tonnage in 1853, and 642 vessels with 366,176 tonnage in 1854. The departures for Australia, Cape of Good Hope, China, Singapore, Calcutta, and Bombay, exhibit the principal falling off.

Irish Shipping Trade.—The return lately issued on this subject, embraces "the number and tonnage of the vessels entering and clearing outwards of the several ports of Ireland from and to foreign ports, distinguishing the foreign from the shipping of the United Kingdom; the number and tonnage of the vessels employed in the channel and coasting trade; also the number and tonnage of the vessels registered in the several ports of Ireland, for the four years commencing the 5th January, 1850, and ending 5th January, 1854, in continuation of parliamentary paper No. 171 of session 1851."

FOREIGN TRADE.

	Entered Inwards.			Cleared Outwards.	
	British. Tons.	Foreign. Tons.		British. Tons.	Foreign. Tons.
1851...	246,192	166,417	1851...	165,123	146,670
1852...	306,013	269,134	1852...	212,982	233,731
1853...	286,708	181,229	1853...	168,955	155,372
1854...	235,596	237,499	1854...	144,370	219,105

COASTING TRADE.

	Entered Inwards. British. Tons.	Cleared Out. British. Tons.		Vessels Registered. Vessels.	Tons.
1851...	2,494,732	1,777,264	1851...	2,249	261,432
1852...	2,570,112	1,838,822	1852...	2,203	262,411
1853...	2,580,791	1,913,844	1853...	2,178	254,997
1854...	2,902,292	2,107,605	1854...	2,219	259,364

It will be observed by this Table that the foreign trade of Ireland was highest in 1852, and smallest in 1851; and that the coasting trade has shown a regular and steady increase, the total tonnage employed in that trade being 5,004,897 tons in 1854, against 4,271,996 tons in 1851, showing an increase of 732,901 tons. The number of tons registered appears to have been greatest in 1852. On analysing the Tables it appears that during the four years ending the 5th of January last, the foreign and home trade of Belfast has increased 51½ per cent., Derry 38¼, Limerick 35, and Dublin 15, whilst Waterford has decreased 18 per cent., and Cork 5. We also find that the total trade, inwards and outwards, was, in the year 1854, for Belfast 1,650,114 tons, and during the same period for Dublin 1,602,992 tons. The trade of Newry comprised 19,192 tons engaged in the foreign inward and outward, and 133,730 tons inward and outward coasting trade in the year ending 5th January, 1854. The vessels registered were 120, with 8,567 tons. Galway had 25,175 tons of shipping engaged in the inward and outward foreign, and 13,937 tons in the inward and outward coasting trade during the same period. Her registered vessels numbered 15, with 861 tons. Dundalk had 5,506 tons foreign, and 158,346 tons coasting trade, inward and outward, during the same time; the vessels registered were 26, with 2,480 tons. The extent of the foreign trade with Galway, it will be seen, exceeds that of both Newry and Dundalk added together.—*Belfast Mercantile Journal.*

The Weather and Lunar Phases.—It is worthy of remark, that the persuasion of the meteorological influence of the moon is never so strong and so undoubting as among those classes of persons who are at once most deeply interested to foreknow the weather, and have the best and most unceasing opportunities of observing the phenomena. No navigator, from the Captain or Master to commonest seaman, no agriculturist or gardener, from the largest farmer to the commonest field labourer, ever doubts for a single moment the influence of new and full moon on fair weather and foul.

Notwithstanding the general diffusion of scientific information and the multitude of encyclopædic compilations and elementary and popular digests of physical science that are accessible, it is astonishing how universal is the ignorance on this subject even among persons who might be supposed to spare no pains to inform themselves. Thus we find in the otherwise excellent compilations of the late Mr. Loudon on agriculture and gardening, a chapter on the means of prognosticating the weather, in which the snpposed influences of the lunar phases have precedence over the indications of the barometer, the thermometer, the hygrometer, and the rain-guage, the former being characterised by the author as "natural," and the latter as "artificial" data. Why the variations of the atmospheric pressure and temperature, and the quantities of water which are suspended in, or which fall from the atmosphere, should be regarded as less "natural" indications of the weather than the moon, the author does not inform us.

In some of the numerous weather almanacks which have from

time to time circulated, there appears a table professing to indicate the relation between the changes of the weather and the lunar phases, entitled *Herschel's Weather Table*. The general public have fallen into a natural and excusable mistake (from which Mr. Loudon does not seem to have escaped), in supposing that this absurd affair has been sanctioned by the authority of one of the illustrious astronomers whose name it bears. Whether the table in question is really the production of any person bearing that celebrated name we cannot say; but the public may be assured that neither of the eminent astronomers, who have rendered the name of Herschel for ever memorable, has had any concern with it.

The popular notions concerning the influence of the lunar phases on the weather have no foundation in theory, and no correspondence with observed facts. That the moon, by her gravitation, exerts an attraction on our atmosphere cannot be doubted; but the effects which that attraction would produce upon the weather are not in accordance with observed phenomena; and, therefore, these effects are either too small in amount to be appreciable in the actual state of meteorological instruments, or they are obliterated by other more powerful causes, from which hitherto they have not been eliminated. It appears, however, by some series of observations not yet confirmed or continued through a sufficient period of time, that a slight correspondence may be discovered between the periods of rain and the phases of the moon, indicating a very feeble influence, depending on the relative position of that luminary to the sun, but having no discoverable relation to the lunar attraction. This is not without interest as a subject of scientific inquiry, and is entitled to the attention of meteorologists; but its influence is so feeble that it is altogether destitute of popular interest as a weather prognostic. It may, therefore, be stated that as far as observation combined with theory has afforded any means of knowledge, there are no grounds for the prognostications of weather erroneously supposed to be derived from the influence of the sun and moon.—*Dr. Lardner's Museum of Science and Art.*

BLOCKADE OF THE GULF OF FINLAND.

FOREIGN OFFICE, *July* 12, 1854.

It is hereby notified, that the Lords Commissioners of the Admiralty have been informed by Vice-Admiral Sir Charles Napier, K.C.B., commanding her Majesty's naval forces in the Baltic, that on and from the 26th of June last, a strict and effective blockade was actually established by the combined fleets of her Majesty and of his imperial Majesty the Emperor of the French, of the various ports of the Gulf of Finland as hereafter specified; that is to say:—The whole of the ports in the Gulf of Finland to the eastward of Helsingfors and Sweaborg, on the Finland shore, including Borgo, Lovisa, Pythis, Frederikshamn, Werolax Bay, Viborg, Biorko Sound, and all inter-

mediate ports, roads, havens, and creeks to Cape Lubovski in lat. [illegible] N., and long. [illegible] E.

From Cape Lubovsk the line of blockade crosses to Tolbouchin Light, immediately off Cronstadt, then across southward to off the town of Borko, in the province of St. Petersburg, in lat. [illegible] N., long. [illegible] E. That a complete blockade of Cronstadt and St. Petersburg has been effected by the combined fleets which anchored off Cronstadt on the 26th June.

Proceeding westward, the line of blockade extends from Borko to [illegible] Island, thence to [illegible] Ness, and from [illegible] Ness to [illegible] Point, which includes the Bight of [illegible], from thence to [illegible] Point, which includes [illegible] Bay, then the river Narva, and the whole coast of Esthonia and adjacent islands to [illegible] Light, situated in lat. [illegible] N., long. [illegible] E. And it is hereby further notified, that all the measures authorised by the laws of nations and the respective treaties between her Majesty and the different neutral Powers, will be adopted and executed with respect to all vessels which may attempt to violate the said blockade.

NEW CHARTS.

Published by the Hydrographic Office, Admiralty, from April to July, 1854, and sold by J. D. Potter, Agent, [illegible] Poultry, and Tower Hill, London; and by all the principal Chartsellers; also at the various Custom-Houses of the Kingdom.

	s.	d.
England—Falmouth Harbour, Capt. [illegible], R.N. 1852 ...	[illegible]	[illegible]
Norway, Sheet 1—The Naze to [illegible] ...	[illegible]	[illegible]
Baltic Sea—Views in the Baltic ...	[illegible]	[illegible]
Gulf of Riga, [illegible] Survey ...	[illegible]	[illegible]
Gulf of Finland—Gulf of Finland, [illegible], Swedish Survey ...	[illegible]	[illegible]
Port Baltic to Hogland, Russian Survey ...	[illegible]	[illegible]
Hogland to Seskar, [illegible] ...	[illegible]	[illegible]
[illegible] ...	[illegible]	[illegible]
and Louisa [illegible] ...	[illegible]	[illegible]
[illegible] Bay, [illegible] ...	[illegible]	[illegible]
[illegible]—[illegible], [illegible] R.N. ...	[illegible]	[illegible]
Port Baltic ...	[illegible]	[illegible]
Marmora Sea—Prince's Islands ...	[illegible]	[illegible]
Black Sea—Varna ...	[illegible]	[illegible]
Baltic Bay ...	[illegible]	[illegible]

EDWARD DUNSTERVILLE, Master R.N.

Admiralty, July 20th, 1854.

To Correspondents.—[illegible]

All Communications to be addressed to the Editor of the Nautical Magazine, care of Mr. [illegible] Potter, [illegible], London. [illegible]

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

SEPTEMBER, 1854.

OUR MERCANTILE MARINE—No. IV.

WRECKS.

NOTHING is easier than to take a mass of statistics, and, for any special purpose, (by giving a one-sided view of a question,) magnify the results and distort the facts which such a collection of figures, when impartially obtained, are intended to disclose. This has frequently been done in respect to the wrecks and other casualities incident to Shipping—the consequence of which is that the most exaggerated notions of " disasters at sea" are rife in the public mind. The truth of our assertion will become apparent as we proceed to draw attention to certain data which have been collected from time to time; and while we cannot doubt that there may be many who will not give us credit for perfect impartiality in dealing with a question which (although it relates to the momentous subject of loss of life, or valuable property) attaches, in many instances, some degree of blame to those who have the command of, or are connected with the working of vessels, we nevertheless feel it our duty to assert that much more is laid to the charge of " incapacity" and " recklessness" than by right should be so attributed; and we further add that the very prevalent opinion, that casualties in the Mercantile Marine are out of all proportion to the number of ships engaged in the commerce of the country, is altogether a fallacy.

It is more than two years since a return to an order of the House of Commons was made by the management of Lloyd's, (and published under the form of a Blue Book,) of the casualities to Shipping for the four years ending December, 1850, so far as they were known and registered—a list extending over 193 folio pages. The first impression, which the sum total of the figures there given would convey, is startling enough—since the recorded number of wrecks, collisions, and various other accidents, amounts to 13,510, being at the rate of 3377 per annum, 9 per day, or 1 for every $2\frac{3}{4}$ hours—and at the same time the

list is ackowledged to be imperfect. But it must be borne in mind that "Lloyd's" register is not confined to important casualities alone, but that accidents of every possible description are recorded. If a ship on entering a river, or on making a port, grounds on a shoal, and is got off at high water—or if during a voyage any important spars are carried away the accident is duly entered. Nevertheless, it cannot be denied that a large proportion of the disasters are of a very serious character, as the following analysis shows :—

CASUALITIES TO SAILING VESSELS OF ALL KINDS.

Driven ashore by stress of weather—vessels and cargoes partially or totally lost	5117
Collisions—vessels obliged to run into port in a sinking state	2665
Wrecked	2295
Foundered	883
Abandoned—water-logged—dismasted—on fire—crew taking to boats	679
Sailed, and never heard of again	204
Burnt by accident	87
Damaged by ice	51
Burnt by cargoes igniting; coals, 11—flax, 1—wool, 1—cotton, 3	16
Struck by lightning and damaged	15
Blown up; by coal dust, 7—spontaneous combustion, 1—gas, 4—powder, 1	13
Plundered by pirates and destroyed...	13
Taken possession of by convicts and wrecked ...	1
Struck by a whale and abandoned	1
Struck by a waterspout	1
	12,041

CASUALITIES TO STEAMERS.

Driven ashore, but got off again	103
Collision at sea	146
Wrecked	17
Foundered	30
Burnt...	8
Partially burnt	7
Abandoned at sea	2
Capsised	1
Put into port in a sinking state	2
Sunk, and raised again	5
Sailed, and never heard of again	1
	322

The casualities here represented are not equally distributed over all seas, and comparatively few of our first-class large ships are found

to be included in the catalogue of disasters, as may be seen from the following list:—

CASUALITIES TO VESSELS OF 700 TONS AND UPWARDS.

Driven ashore, but got off again	25
Total wrecks	12
Collisions	7
Dismasted	5
Abandoned at sea	4
Burnt	4
Condemned	1
Sailed, and never heard of again	1
Picked up at sea abandoned	1
Abandoned at sea on fire	1
Partially burnt	1
Damaged by ice and leaky	2
	64

Capt. Fitzroy, when examined before a Committee of the House of Commons, in 1843, observed that "the principal cause of the losses of British ships has been the neglect or incompetency of those in command of them. It is very rarely that any vessel is lost except in consequence of neglect or mismanagement. In saying neglect, I mean not attending sufficiently to the position of the ship, to heaving the lead, to taking all those precautions which ought to be taken by a good seaman anxious for the safety of his ship, and knowing how to take care of her; and incompetency from not knowing how to make proper observations for ascertaining the ship's place, and not being practical seamen acquainted with their duty, and not having had sufficient experience, either as masters or mates of merchant ships, to entitle them to take under their charge not only the ship and cargo, but the lives of all who are embarked on board."

This is a very sweeping censure, and by no means justifiable. That many serious disasters, (especially among the collisions,) arise from negligence, the want of a proper look-out, and not unfrequently from a wilful disregard of the "rule of the road," we are ready to admit; we are also willing to allow that as a class, considering the responsibility of the eharge attaching to officers of the merchant service, it would be desirable to see education more extended among them,—but we entirely deny that the *principal cause* of the losses of British ships is to be laid to the neglect or incapacity of those in command of them. In a letter, (since published as a pamphlet,) addressed "To the Editor of the *Friend of China*" by "A Master of a British Merchant Ship," we find the various charges, that have from time to time been brought against the body of which the writer is a member, answered by a recriminatory process, and concluding with a list of ships belonging to H.M. Navy among which casualities have occnrred between 1793 and 1819, and again from 1835 and 1851—making a total of 433. But recrimination is not justification. So far as we have inspected the list it rather bears out the following analysis, which

shows that where the greatest dangers exist, there the largest number of casualities will be found to occur:—

PROPORTION OF BRITISH SHIPS LOST DURING TWO YEARS IN THE DIFFERENT TRADES, (THE TOTAL NUMBER DURING THE TWO YEARS BEING 1,143.)

22·31 ℔ cent.	in the	Coasting Trade of England and Scotland.
12·42	„	West Coast of England and Scotland.
9·36	„	British North-American Trade.
8·57	„	India and China Trade.
7·79	„	West Indies, Mexico.
7·09	„	Baltic Trade.
5·95	„	Mediterranean Trade.
4·73	„	Trade with France, Holland.
4·72	„	Coasting Trade to and from Ireland.
3·50	„	Australia and New Zealand.
2·80	„	Ports on the Coast of Africa, Madeira, and the Western Islands.
2·28	„	Trade with Ports between Brest and Gibraltar.
2·01	„	West Coast of North and South America, Brazil, &c.
1·92	„	United States.
1·39	„	to and from the Channel Islands.
·87	„	Black Sea Trade.
·79	„	Cape of Good Hope.
·62	„	South Sea and Davis's Straits Fisheries.
·53	„	Archangel Trade.
·35 ℔ cent.		abandoned and missing, (voyages not known.)
100·00		

It will be seen from the above that the navigation of no portion of the ocean is attended with so many disasters as that which surrounds our own coast; indeed, while a total of 692 British vessels of 127,188 tons burden were wrecked in all seas in 1850, no less than 681 vessels of all nations were wrecked on the British coasts alone in the same year; they may be thus classed:—

Total wrecks	277
Sunk by collisions or leaks	84
Stranded and damaged (having to discharge cargo)	304
Abandoned	16
	681

Again, in 1851, the number of vessels wrecked on the British coasts amounted to 701, of which 351 were total wrecks; and in 1852 they reached the fearful amount of 1,115, among which there were 533 total wrecks.

Particular gales have caused great havoc among the Shipping on our coast; thus, on 31st August and 1st September, 1833, there were 61 British vessels lost on the sands of the North Sea and on the east

coast of England. In the great gale of 13th January, 1843, the number amounted to 103; and, in 1846, 39 vessels were ashore in Hartlepool Bay alone.

As might be expected the commencement and close of the year, (winter months,) furnish the largest number of casualties; during 1852 the wrecks in the different months stand as follows:—January 126; February 77; March 32; April 44; May 41; June 29; July 18; August 42; September 85; October 164; November 189; December 268; making a total of 1,115 vessels thus distributed,

On the East Coast	464
„ South Coast	158
„ West Coast	235
„ Coasts of Ireland	128
„ Scilly Islands	5
„ Channel Islands	9
„ Orkneys and Shetland	18
„ Isle of Man	18
Other places	80

We have frequently had occasion to draw attention to negligence on the part of officers in charge of the watch, especially when making the land, and we have always been ready to allow that incompetency in some, and recklessness in others, have been the causes of disasters which would never have occurred with ordinary skill or care, but we cannot by any means give our adhesion to the sweeping censure which is very commonly passed on the officers of the merchant service when losses do occur, The intricacy of the seas and coasts, as well as the storms, periodical or occasional, to which they are subject — the dangers arising from improper stowage—the heating and combustible nature of the cargo—nay the age of the vessels themselves, are rarely taken into account—and that this last has its influence will be seen from the following Table of total loss upon vessels registered in Lloyd's books:—

Loss upon vessels registered	A 1	...... 1·808	℔ cent.
„ „	*Æ	...... 3·254	„
„ „	Æ	...... 3·700	„
„ „	E	...... 3·375	„
„ „	I	......33·333	„
„ „	—	...... 3·022	„

We trust we have been sufficiently particular in our details to show that the many casualities which take place among Shipping generally arise under circumstances beyond the controul of those to whom the charge is intrusted, and indeed in a great measure incidental to the nature of the service; and if any further proof were required to substantiate our argument, that the loss of life and property in British ships is not so disproportionate to the extent of our commerce, we have the authority of Mr. Lance, of Lloyd's, who states, in the *Journal of the Institute of Actuaries*, that in 1851 the per centage loss upon British sailing vessels was 2·4178 per cent. upon the number, and 3·1933

per cent. upon the ton; and the per centage loss upon steam vessels was 0·8965 per cent. upon the number, and 0·6995 upon the ton.

One thing, however, is certain in connection with these disasters, wherever they occur, and under whatever circumstances—the chances for life must be proportionate to the means which have been prepared to ensure its preservation. Harbours of refuge at places judiciously selected—life-boat, as well as life-rocket and mortar stations, wherever wrecks are most to be dreaded—together with every known appliance for giving assistance to our fellow-men in distress should be earnestly promoted; the means which tend to ensure safety should be ready at hand whenever required, alike on shore as on board-ship; and the utmost encouragement given to those societies established with a view to further such laudable ends. M.

THE SOUND DUES.

The Dues levied on vessels trading to the Baltic have long been considered a source of grievance by the majority of those whose commercial interests are involved in that trade, and with the view of obtaining a new arrangement with the Danish government, the subject has been frequently represented to Parliament during the last few years, but hitherto without any beneficial result. It cannot be denied that the navigation at the entrance of the Baltic is exceedingly intricate, and that if the Lights and Buoys in the Sound and Belts were not duly cared for, the channels would be more dangerous than they are at present. But the Dues are far above what will maintain a sufficiency of Lights and Buoys—they constitute in fact an impost or tax, being a direct source of revenue to the Danish government. If Danish territory entirely encompassed the Baltic, and if that sea were a Danish lake, we can conceive the right of levying an impost such as is demanded for permission to navigate the Sound and Belts. But at present the tax is one on commercial enterprise, and neither its antiquity, nor an impoverished exchequer, establishes its right. The same impediments might with the same justice be imposed for the entrances to the Gulf of Bothnia and the Mediterranean, and for the Straits of Dover—not to mention many other channels which could be brought into the same category. The merchants of the United States had long looked at the question in its true light, and regarding the tax as unjust and burdensome, resolved that so far as their ships were concerned, it was important to procure the annulment of it, which was effected on the representation of the United States' Government to that of Denmark. The merchants of Hull have recently sent a petition to both Houses of Parliament on the subject, a copy of which we annex:—

"To the Right Honourable the Lords Spiritual and Temporal of the United Kingdom of Great Britain and Ireland in Parliament assembled; the humble petition of the undersigned Bankers, Merchants, and Shipowners of the Port of Kingston-upon-Hull, showeth—

"That the tolls levied by the Danish Government upon vessels

and their cargoes passing through the Sound and Belts are a serious burden on the trade of this Port and Kingdom.

"That the levying of these tolls, as the consideration upon which vessels are permitted to pass the Danish Coasts, and to an extent infinitely beyond what is requisite for the maintenance of pilots, lights, and beacons, is an infringement on the freedom of the seas, and it appears to your petitioners that it cannot be submitted to without degradation.

"That the imposition of these tolls is productive of great delays, out of which damage frequently arises to ships and their cargoes, and demoralisation to their crews.

"Your petitioners, therefore, most earnestly beg that your Lordships will, without further delay, take such measures as will effectually relieve them of the imposts."

In order to produce a proper effect, it will be necessary for all who are connected with the shipping interest to urge the claim to immunity from the impost, for, although all are not equally interested in the Baltic trade, all are indirectly affected by the Dues being so levied, and it is particularly desirable to have commerce and navigation as free and unshackled as possible.

HARBOUR OF REFUGE AT ST. MICHAEL'S.

THE following Letter, addressed by Mr. H. W. Parkin Scholtz to the Editor of the *Shipping Gazette*, is sufficiently interesting to be inserted at length, since it relates to a subject of the utmost importance to commerce and shipping:—

"Several members of Parliament have entered with great cordiality into the question of harbours of refuge for this country, and their construction seems so very desirable to a maritime nation that, in the course of a short time, I anticipate seeing them established. But however much they may be necessary on our own coasts, I think it will not be disputed that the construction of one in the midst of the Atlantic, on a locality that must be passed either more or less proximately, by nearly all vessels employed in the United Kingdom, is a matter deserving of the greatest attention, and, if carried into execution, would be of the highest benefit, not only to this country and to Portugal, but to the shipping of every other nation.

"St. Michael's, the principal island of the Azores (or Western Islands), is situated in lat. 37° 45′ N., long. 25° 35′ W., halfway in a direct line between New York and the Straits of Gibraltar. This is the place, above all others, that could be pointed out for the construction of such a harbour of refuge. The Azores are capable of yielding supplies of all kinds at very reasonable prices, and possess the best water in the world. Good beef is only about 3*d.* to 3½*d.* per lb.; bread and biscuit 2*d.* per lb. Whole British fleets, during the last war with Spain, America, and France, were supplied very advantageously from these islands.

"The trade of St. Michael's is yearly increasing; she exports about 40,000 quarters of Indian corn, and 120,000 boxes of oranges, annually to this country; and it is quite capable of becoming a depôt for the requirements of the Atlantic trade.

"The passage of storms across the Western Ocean is to the eastward, northward and eastward, or southward and eastward, and the heaviest winds are the southerly, westerly and northerly. Storms coming from the westward accelerate the great Atlantic current passing north of the Azores, which would enable ships in distress to make St. Michael's, were there a harbour of refuge; instead of which they are compelled to proceed in their course, and often become total wrecks. In order to give some idea of the disasters which occur in the western seas, and which to a great extent would be prevented by a harbour at St. Michael's, I will just mention that in 1853 the trade between England and the United States employed 3,483 ships of 2,638,314 tons; and that the insurance losses in America alone averaged during the last nine months over one million of dollars per month. During a period of eighteen months 574 vessels were lost at sea, 50 missing, 102 wrecks passed, and 838 put into ports in distress. Many of these vessels might have been saved if a safe port existed at the Azores Islands.

"The great increase in the export of British manufactures to America and Australia, together with the expectation, in consequence of the present war with Russia, of greatly increased supplies of corn from North America, of tallow from South America, and hemp, flax, and tallow (nearly as fine as Russian) from India and Australia, makes it more important than ever that no delay should be allowed to occur in the construction of such a harbour.

"According to a return supplied by the Board of Trade, 15,274 ships, of 3,415,013 tons, trading with Great Britain, passed in 1852 in the vicinity of the Azores, not including those employed in the Baltic, Peninsula, and Mediterranean trades, which altogether may amount to 30,000 sail.

"Several plans have from time to time been made by eminent engineers employed by the Portuguese government to survey St. Michael's, and to draw up estimates of the cost of such a harbour. These have varied from £60,000 to £150,000. In 1814 Colonel Jose Therecio Nicholoty, an experienced engineer, well-known in Europe, also made a plan, at the request of John VI.; but this, together with other projects, previously and since that time, by Sir John Rennie and Mr. John Scott Tucker, have had no other result than to entertain the people's anxiety with the eternal comedy of promises and good wishes.

"The capitalists of St. Michael's are anxiously looking forward to the commencement of the harbour, and are prepared, in conjunction with the assistance of British energy and capital, to carry on the work to a successful conclusion; but what is required is, that the Portuguese government should grant the necessary guarantees, and I think the present a most favourable time for our government to urge upon that of our friendly ally the desirability of at once giving the necessary concession. We expect great things from the future King

of Portugal, who is deeply indebted to the Azores for his position; for let him reflect that his mother's throne was partly recovered at the cost of Azorian blood. It was at St. Michael's where his grandfather, Pedro IV., prepared his expedition, and who was afterwards received by the heroic citizens of Oporto in the Prayas do Mindello. After the expenditure of so much blood, which secured to Donna Maria II. the throne of Portugal, the only reward for so much faithfulness has been neglect and forgetfulness. Both Oporto and the Azores have at all times shown themselves the liberal supporters of constitutional governments, and the promoters of the progress of the country.

"Let us hope that Pedro V. will redeem the unfulfilled promises of his ancestors, and that, under his enlightened rule, Portugal will rise to that position of wealth and importance which so fine a country and so noble a people ought unquestionably to enjoy."

Mr. Scholtz, in a letter to J. Hume, Esq., M.P., has given some further information on the subject, a portion of which is subjoined:—

"The Royal Mail Steam Packets, notwithstanding their present power and capacity, would touch at St. Michael's, both on their passage out and homewards, when pressed by bad weather or want of fuel. The *Great Britain*, on her way home from Australia last year, was obliged to call at that island, and compelled to leave with only half the quantity she required, in consequence of bad weather. The West India steamers have frequently been obliged to continue their course, when it would have been most desirable to get supplies of coals, &c., at Fayal.

"In no part of the world is protection so much needed by the shipowners, merchants, and underwriters of this country as at the Azores, which is corroborated by the thirteen years' meteorological observations made by the British consul, with my assistance at those islands.

"In 1850 a decree passed in Lisbon for an impost of one per cent. on all the imports and exports of St. Michael's, which annually amounts to about £200,000. This impost was for five years, for the purpose of repairing the areal (a small basin used by coasters), and which was commenced in 1846; and on the completion of the repairs, a rate of 30 reis (the fortieth part of a Spanish dollar) per ton to be paid by all ships trading to St. Michael's.

"In the beginning of 1853, Mr. Tucker was officially appointed to give his opinion as to the plan for converting the basin into a dock; and, in that opinion, he stated that 'material, time, and money would be very uselessly expended in a basin only large enough for twelve trading vessels, and recommended that a harbour should be constructed in the foreshore of the city of Ponta Delgada, the natural centre of the entire commerce, and the chief seat of the Azorean government, with inner works, such as quays and docks, occupying 30 acres of ground, at an estimate of £80,000.'"

THE HURRICANE IN THE MOSAMBIQUE CHANNEL.

[We have been favored, through the kindness of Col. Sir William Reid, C.B., F.R.S., with the following remarks by Mr. Piddington, so well known in connection with the Law of Storms, and whose observations have rendered signal service to the mariner. The hurricane in the Mosambique Channel deserves attention, inasmuch as it appears to be connected with a succession of those terrific visitors distributed over the Indian Ocean during February and March last, in respect to which we are in possession of valuable data, shortly to be published in the Magazine; and further, we are sorry to add that the Captains of vessels overtaken by the cyclones do not appear to have been happy in manœuvring. It will be seen on reference to the *Mer. Mar. Mag.*, pp. 206—209, that we had previously drawn attention to the errors of Capt. Sedgwick's book and diagrams as liable totally to mislead those who put any trust in the instructions given by that gentleman for avoiding the dangers of the cyclone.—*Ed. Mer. Mar. Mag.*]

We are indebted to our Bombay contemporaries for an account of the cyclone in which the ship *Earl of Balcarras* was dismasted in the Mosambique Channel, and we cannot allow it to pass without a word of comment, which we feel it a matter of public duty to make in such a case.

Had the *Balcarras* been simply a merchantman, with her usual cargo, crew, and passengers, we might perhaps have passed over her disasters without a comment, leaving to the underwriters the settling of the little bill, with which, as, being on such occasions the pay-for-all's, they are no doubt quite satisfied; but she had on board, we are told, 446 invalids, women and children, and thus the ship and her management are *pro tanto* public property; for, as we long ago wrote when commenting on the horrible catastrophe of the suffocation of fourteen individuals in a cyclone on board the *Maria Somes*, carrying troops from Ceylon to England,—"It is perfectly heart-sickening to think that when a regiment of gallant fellows is sent out on foreign service, and has perhaps for twenty years braved the risk of climate and battle, they are to be needlessly exposed (we had nearly said wantonly) to death by foundering at sea, shipwreck on savage coasts, and now suffocation with the horrors of the black-hole or a slaver's hold."

The *Balcarras*, then, it would seem, was on her homeward passage, and on the 21st February was about the middle of the southern entrance of the Mosambique Channel, where she had abundance of sea room, when a gale came on from the N. E. She evidently ran with this till she could run no longer; and finally lost all her masts, narrowly escaping foundering, from their wreck beating against the ship's stern and other casualties, and by the quantity of water in her hold, which was only kept under by the energetic labour of the invalids and their officers at the pumps. In a word, the ship ran down to the S. W. by S., with a furious cyclone coming down upon her from the northward or N. N. E. to the S. W., or S. S. W., so that she just reached the centre when the cyclone passed astern of her; the gale ending at S. and S. W.

For every scientific sailor it is only necessary to state this, or refer to the extract of the log, to see the error committed. To the landsmen we may say that the *Balcarras* had only to heave-to, when the first hour or two would have shewn him *what the track of the cyclone was*, and that he should remain hove-to, to allow it to pass ahead of him. When in the course of, say six hours, it had done so, he might then have safely stood on, not having damaged a rope-yarn or frightened the most timid woman on board. If he found he was nearing the cyclone again by its slow rate of travelling as compared with his run, which his barometer and the weather, and sea, would have infallibly have told him, he should have hove-to again, and even a third time, (for this has been done,) if necessary; and we inform Captain Morris, if ever this should meet his eye, that there is so little mystery in it that we believe half the junior officers in the P. and O. Company's service, and in the first-rate passenger ships from this port, could tell it to him as clearly as we have done.

Strange to say, however, we find him with all the information before him as we must suppose, (for we cannot imagine that the Bombay government allow ships to leave with invalids on board without knowing at least if the usual books on the *Law of Storms* are on board) though warned by the south-western sea, the *rearward* sea of the cyclone, that it was ahead of him, and by the veering of the wind, his barometer, and the increasing bad weather, that he was nearing it rapidly, running down till the vessel became unmanageable, and all her disasters followed in quick succession. Nothing indeed, but her being, as she is, an absolute castle of teak, being one of the finest vessels out of the port of Bombay, could have saved her from foundering!

A friend suggests to us one excuse for all this lamentable mischief and suffering. He thinks Captain Morris may have been misled by that mischievous quack, Mr. Sedgwick, whose book we fear will cost many a poor fellow his life, by the absurd empirical rules which it lays down, and which ignorant or indolent-minded men are but too prone to follow, as they follow the iterated prescriptions of quack doctors, who tell them on all occasions to "take my pill." In this case the pill has been apparently taken, and such of our readers as are curious in these matters will find a box of them in the diagram for the hurricanes of the southern hemisphere following page 18 of Captain Sedgwick's foolish book. The particular pill administered in the case of the unfortunate *Balcarras* will be found at the bottom of the diagram, the first of the showy circles in it in which it is said, "If a N. E. wind veers to the eastward, run S. W." So she was made to "run to the S. W." till she caught the demon of the cyclone in his full fury.

It is not necessary, we suppose, to explain here that the absurd quackery of this rule, and of all the others in this work, consists in its author almost wholly disregarding the two other main elements which it has been most clearly shewn must guide the mariner in the management of his ship when she is a good one and has sea room. Mr. Sedgwick indeed glories in his contempt of the elements of the problem, for he calls his diagram "the way to avoid danger whether

the hurricane has curved or not," and thus omits wholly the track and the rate of travelling! Let our readers imagine an astronomer predicting the motion of a planet, without attending to its periodical revolution and the effects of any other celestial bodies on its orbit, and they will have some idea of the chance of good management which the poor ship has when so quacked. No doubt *some* escape from it, as gentlemen survive a pound of Morrison's pills, or three seers of Holloway's ointment; though their constitutions and frame-work get sadly shaken, but like the old drunkards they serve as the devil's baits for the next generation of unthinking fools. We leave the commander of the *Balcarras* all the benefit of the doubt, and will even congratulate him on his narrow escape if he will nail his Sedgwick to the capstan like a bad shilling, and write this rule in the first page of his log-book. *All positive rules in cyclones are sheer nonsense; written by the half-informed for the misleading and destruction of the ignorant. Every ship in every cyclone must have its own peculiar management, dependant on the four great elements of the problem, which are: The ship and her sea room. The track of the cyclone. Its rate of travelling. The ship's run or drift.*

But there is one serious light in which these things ought to be looked at, and our readers will find it in the following catalogue of ships with troops, which have foundered or only escaped after the utmost danger and suffering, by almost a miracle; every one of which might have avoided this mischief by due attention to the Law of Storms.

1st Sept., 1840.—Ship *Golconda* with 300 men and head quarters of the 37th Madras N. I., on board, foundered by running into a Tyfoon in the China Sea.

2nd Nov., 1845.—*True Briton* and *Runnimede*, nearly 700 men, women and children of H. M. troops on board. Thrown on shore by running into a Cyclone on the coast of the Inner Andaman Islands and miraculously saved by being carried high and dry on shore over the outer reefs by the storm-wave!

3rd March, 1846.—Ship *Maria Somes*, with 300 men and 20 women and children of H. M. 90th Foot, dismasted and nearly foundering, by running headlong into a Cyclone in the Southern Indian Ocean. Fourteen persons suffocated by the necessary closing of the hatches:

4th March, 1854.—*Earl of Balcarras* with 315 invalids, 43 women and 88 children on board.

Now, throwing away odd numbers, here is a little army of 1,200 Europeans and 300 sepoys exposed almost wantonly and uselessly to perils not inferior to those of a battle, and losing one-fifth of their number; and all this for the want of a little vigilant supervision as to the qualifications of the ship-captains to whom their lives are entrusted! How much more of such useless risks there may have been which have not been known, because no accident has happened, our readers may suppose for themselves.

GENERAL SUMMARY OF "THE MERCHANT SHIPPING ACT, 1854."

[*An Act to Amend and Consolidate the Acts relating to Merchant Shipping, and to come into operution on 1st May,* 1855.]

It is divided into eleven parts as follows:—Part 1 defines the duties and functions of the Board of Trade. Part 2 relates to the ownership, measurement, and registration of British ships, as well as the transfer, mortgage, and national character of such vessels. Part 3 regulates the position of, and determines the relations between Masters and Seamen; it provides also for the constitution of Local Marine Boards and Shipping-offices, the engagement of Seamen, and payment of wages, and other matters relating to the protection and discipline of seamen when on service. Part 4 provides for the building, equipment, and inspection of all sea-going vessels, with a view to safety and the prevention of accidents. Part 5 refers to Pilots and Pilotage. Part 6 to Lighthouses. Part 7 to the Mercantile Marine Fund. Part 8 to Wrecks, Casualties, and Salvage. Part 9 to the liability of Shipowners. Part 10 to Legal Procedure. Part 11 to Miscellaneous Matters.

Part 1. *Functions of the Board of Trade.*—The Board of Trade is to be the department to superintend all matters relating to Merchant Shipping, and is authorised to carry out and enforce the provisions of this Act. All documents and certificates issued by the Board, and signed with its seal, are to be received as evidence without further proof, unless the contrary be shown. The Board of Trade will also issue the forms of instruments, books, and papers, required by this Act, and is empowered to make from time to time any requisite alterations, such forms being exempted from the stamp duty. All fees and payments, subject to special provisions, are to be paid over to the Mercantile Marine Fund, except fines, which will be paid into the receipt of the Exchequer for the Consolidated Fund. All Consuls, Officers of Customs, Local Marine Boards, and Shipping Masters, are to make such returns and reports as the Board may direct, and Shipping Masters may be required to produce the official log-books and other documents. Officials of the Board of Trade, Naval Officers, Consuls, and Officers of Customs, may inspect such documents, and may muster crews. The Board of Trade has also power to appoint Inspectors to report on various matters.

Part 2. *Ownership, Measurement, and Registration of British Ships.*—This part refers to the whole of Her Majesty's dominions. Ships to be entitled to the description of British must belong to natural-born British subjects, or to persons lawfully naturalised in Great Britain or the Colonies, or to Bodies Corporate established under the laws of the United Kingdom, or having their principal place of business in it. To claim this title, however, every British ship must be registered before the Act comes into operation, except ships under 15 tons

engaged solely in the Coasting Trade of the United Kingdom, and those under 30 tons employed solely in the Fishing or Coasting Trade of the North American Colonies. Elaborate rules and tables are given for the measurement of tonnage, both in sailing and steam vessels, and the tonnage, (so registered,) as well as the number of the certificate of registry, must be carved or permanently marked on the main beam of each ship, and to be ever after deemed its tonnage. The re-measurement, however, of vessels already registered is not compulsory. The Commissioners of Customs may appoint Officers to inspect ships and carry out the tonnage rules. The Registrars are to be the Commissioners and principal Officers of Customs at any port, or persons administering the Government in the Colonies, &c. The name of the ship must be conspicuously painted upon her, and not changed except to avoid an enemy, unless re-registered, under a penalty of £100, and the vessel must also be previously surveyed. The names of the Owners or Corporate Bodies to which the ship belongs must be declared with other statements, such as the number of Owners and their interest, the port to which the ship belongs, and the name of the Master, which are to be entered into the register book; and the certificate of registry, and all changes in the same are to be indorsed whenever the ship returns to port. Powers are given for provisional certificates of registration, and for the transfer of ships and shares, for sales and mortgages, and the registration of such transfers, &c., and for the punishment of offences against the provisions of this Act.

Part 3. *Masters and Seamen.* — The provisions of this part extend variously. The whole refers to all sea-going ships registered in the United Kingdom. The portion relating to returns and wages refers to all sea-going British ships, wherever registered, and the same is the case with the provisions relating to the shipping and discharging of men in the United Kingdom, and to the volunteering into the Royal Navy. In certain cases, fishing vessels of the United Kingdom, vessels belonging to the Trinity-house, &c., and pleasure yachts are exempted. Local Marine Boards are to be established under the Board of Trade wherever they are now in existence, and at other places, at the option of the Board of Trade, and constituted as follows: —Mayors or Provosts, stipendiary Magistrates of the place, or such (if more than one) as the Board of Trade appoint, are to be *ex officio* members. The Board of Trade will also nominate four persons residing or having places of business within seven miles of the place, and the owners of foreign-going ships registered at the port will appoint six members. The elections are to take place every three years, on the 25th of January, and persons elected to supply vacancies will also retire at that time. The Owners of foreign-going vessels so registered will have votes as follows,—Every registered Owner of not less than 250 tons shall have one vote for each member for every 250 tons owned by him, provided he has not more than 10 votes in all for any one member; and when there is more than one Owner, the votes shall be apportioned to their respective shares, subject to the basis of 250 tons; but where the shares are not sufficient in amount,

the whole shall be deemed to be owned by one of the Owners resident within seven miles of the port. Every person qualified to vote is also qualified to become a member of such Local Marine Board as long as he possesses the required qualification. In case any such Board fails to discharge its duties, the Board of Trade may assume them, and direct a new election. In addition to sending in reports, &c., the Local Marine Boards are to establish Shipping-offices, subject to the partial control of the Board of Trade, as far as regards money matters and the removal of the superintendents (shipping masters), clerks, &c., of these offices. The general business of these offices is—to afford facilities for engaging seamen by keeping registries of their names and characters, to superintend and facilitate their engagement and discharge—to provide means for securing the presence of men, so engaged, on board—to facilitate apprenticeship to sea-service—and to execute all other duties and powers laid upon them by this Act. The fees are fixed in a schedule (P), and the Masters or Owners shall pay the fees on behalf of the seamen, and deduct them from the wages. The business of Shipping-offices may be conducted at Custom-houses, or at Sailors' Homes in London. Examinations are to be instituted by the Local Marine Boards for Masters and Mates of foreign-going and home-trade passenger ships, subject to rules and qualifications, from time to time laid down by the Board of Trade. Fees are to be paid by the applicants, and Certificates of Competency will be granted to those who pass. Certificates of Service for foreign-going ships will be given to Masters or Mates who served as such before January 1, 1851, and to certain Naval Officers; also for home-trade passenger ships, to those who served as Masters or Mates before the same date. All ships are required to have Masters and Mates with the necessary certificates for either service. With respect to the engagement of seamen, the Board of Trade will grant licences to persons approved of for supplying seamen or apprentices. These licenses are revocable on certain contingencies, and the penalty for any person acting in such capacity, other than the Owner, Master, Mate, or some person *bonâ fide* in the constant employ of the Owner, is £20. The same penalty is incurred for employing any unlicensed person in this capacity other than the above exceptions; and no remuneration is to be received beyond the fees fixed by the Act. The Master of every ship will have to enter into an agreement with every seaman, to be drawn in a form prescribed by the Board of Trade; and signed, in the case of foreign-going ships, in the presence of a Shipping Master, who is to explain the terms to the seamen, and take duplicates thereof. In the case of substitutes for deserters and other emergencies, the agreement is to be attested as soon as possible. The following particulars are to be stated in these agreements:—

"1. The nature, and, as far as practicable, the duration of the intended voyage or engagement.

"2. The number and description of the crew, specifying how many are engaged as sailors.

"3. The time at which each Seaman is to be on board or to begin work.

"4. The capacity in which each Seaman is to serve.

"5. The Amount of Wages which each Seaman is to receive.

"6. A Scale of the Provisions which are to be furnished to each Seaman.

"7, Any regulations as to conduct on board and as to fines, short allowance of provisions, 'or other lawful punishments for misconduct, which have been sanctioned by the Board of Trade as regulations proper to be adopted, and which the parties agree to adopt."

Provisions are also made for running agreements for short voyages, (two or more,) provided the agreement does not extend beyond the next 30th of June or the 31st of December following, or the first arrival in port after either day. In home-trade vessels the agreement may be entered into before a Shipping Master or other witnesses. Changes in the Crews of foreign-going Ships are to be reported, and the engagement of Seamen abroad must be executed before a Shipping Master or Commissioner of Customs in the Colonies, or with the sanction, and in the presence of the Consul. No ship is to be cleared or permitted to sail, or Seamen engaged, unless the Master's or Mate's certificates of competency, or service, are produced. Agreements for home-trade ships are to be made half-yearly, and alterations to be attested. Stipulations for the allotment of any part of the wages of a Seaman during his absence, which are made at the commencement of the voyage, must be inserted in the agreement, stating amounts and times of payment to be made; allotment notes must be in forms sanctioned by the Board of Trade, and may be sued on summarily by certain persons and under certain conditions. The discharge and payment of wages for foreign-going ships are to be made before a Shipping Master, to whom the Master must deliver an account of such wages 24 hours previously. On discharge, the Seaman will receive certificates of discharge and certificate of competency, or service, will be returned: the Shipping Master may decide questions referred to him in writing, and his decision is binding. The release of wages is to be attested before a Shipping Master, and no other receipt is a discharge. On every discharge the Master shall make a report of character and capacity, which is to be transmitted to the Registrar-General of Seamen; and the Sailor may have, if he please, his character endorsed on his certificate of discharge. Facilities will be given for remitting Seamen's wages to relatives, &c., and Savings' Banks for Seamen may be established. The right to wages and provisions commences either with the time specified for the commencement of work in the agreement, or with presence on board, whichever first happens. The Seamen are not to forfeit by any agreement their lien upon the ship or their right to recover wages, all agreements to the contrary being void. Wages are not to depend on the earning of freight, nor to accrue during refusal to work or during imprisonment; wages must be paid within two days after the termination of the agreement or at the time of the discharge, in the case

of home-trade Ships; but in all others, except where by the agreement the Seamen are wholly compensated by shares in the adventure, within three days after the cargo has been delivered, or within five days after the Seaman's discharge. In all cases the Seaman is entitled, at his discharge, to one-fourth of the balance due to him. Seamen may sue for wages in a summary manner, but not abroad, unless in cases of discharge or of danger to life. Masters have the same remedies for wages as Seamen. Relief to seamen's families out of poor rates is chargeable on a certain proportion of their wages. Ample provisions are made for the safety of the effects and wages of deceased Seamen, which are to be entered in the Log-book, paid over to the Consuls or Shipping Masters, and remitted to the Board of Trade; and if under £50 may be administered without probate by by the person entitled to do so. On the discharge of Seamen abroad by sale of the ship, or otherwise, the Seamen are to be sent home at the expense of the Owner. Forcing Seamen on shore is a misdemeanour, and they are not to be discharged abroad without the certificate of some functionary, proof of which lies upon the Master. Wages are to be paid when Seamen are left behind on the ground of unfitness or inability to proceed, subject to the expense of subsistence and passage home. Distressed Seamen found abroad are to be relieved and sent home at the public expense, and Masters may be compelled to take them — one for every 50 tons burden; and if discharged contrary to the provisions of the Act, the amount advanced for relief is recoverable from Master or Owner. With respect to volunteering into the Royal Navy, Seamen are to be allowed to leave their ships for that purpose, and all stipulations to the contrary are to be visited with a penalty not exceeding £20. Clothes are to be delivered up at once to the Seaman, and his wages, either in money or bill, to the Queen's officer on his account; but re-payment will be made to the Owner of advance paid by him and not duly earned; and if substitutes are engaged, at extra expense, the Owner may apply for the re-payment of such to the Registrar of the High Court of Admiralty, when a decision will be made in the case.

With respect to Provisions, Health, and Accommodation, on the complaint of three of the Crew to the Officer who commands a Queen's ship, or other officials under this Act, examination shall be instituted, and the proper Provisions, &c., provided, under penalities; but a forfeiture of one week's wages can be made for frivolous complaints. Allowance for short or bad provisions must be made. Medicines, lime-juice, sugar, and vinegar, must be provided, and the Board of Trade may appoint inspectors of medicines. Medical expenses for injuries and other casualties whilst on duty are to be defrayed by the Owner, but in all other cases, expenses to a reasonable amount may, if proved, be deducted from the wages. Foreign-going ships, having 100 persons on board, must carry a Medical Officer. Every Seaman sleeping in hammock is to be allowed a space of 9, and in other cases 12 superficial feet on the deck. The place apportioned to Seamen must be kept free from stores, &c., be properly caulked and well ventilated. Every such place shall be either 6 feet high, or the Seaman,

if in hammock allowed 54 cubic feet, and in other cases 72 cubic feet. Seamen are to be allowed to go on shore to make complaints. Sales of and charges upon wages are invalid, and debts exceeding 5s. not recoverable until the end of the voyage. Penalties are awarded for overcharges by Seamen's lodging-house keepers, and for detaining effects of Seamen. No persons unauthorized can go on board before the final arrival of the ship.

As respects Discipline on board ship, misconduct endangering life or limb is a misdemeanour. The Board of Trade may investigate cases of alleged incompetency or misconduct, and cancel or suspend the Master's or Mate's certificate. Desertion is punishable with 12 weeks' imprisonment, with or without hard labour, and forfeiture of wages and effects on board. Absence within 24 hours of sailing, or neglecting to join, with 10 weeks', with or without hard labour, and the forfeiture of 2 days' pay; and, in addition for every 24 hours' absence, a sum not exceeding six days' pay, or the expenses of procuring a substitute. Leaving ship without leave, before secured, is to be met with the forfeiture of one month's pay; wilful disobedience with four weeks' imprisonment, and continued disobedience with twelve weeks', with or without hard labour, and at the discretion of the court, forfeiture of two days' pay in the first case, and six days' pay for every twenty-four hours' continuance of such disobedience in the second. Assault upon officers, combination to disobey, and acts of wilful damage are similarly punishable with twelve weeks' imprisonment; and in the last case payment equal to the amount of loss. The Owner will be recompensed out of wages for losses entailed by smuggling on the part of the crew. Offences must be entered in the official log-book. Seamen whom Masters of ships are compelled to convey, and persons going in ships without leave, are subject to the same penalties for breach of discipline as if members of the crew. Deserters may be recovered without a warrant, and sent on board in lieu of imprisonment, as may Seamen imprisoned for breach of discipline before the termination of the sentence. Cost of imprisonment, to the extent of £3, and fines, may be deducted from the wages. Officers commanding H.M. Ships and Consuls may hold naval courts, to consist of not more than five or less than three members to hear complaints and investigate wrecks, of which court one member must be a Queen's officer, not below the rank of lieutenant, one a consular officer, one a British Merchant Master, and the rest any of the above or British merchants, and their duties are to carry out the provisions and enforce the penalties above described, and if necessary may supersede the Master. The proceedings, however, must be reported to the Board of Trade. Crimes on the high seas are within the jurisdiction of the Admiralty. A General Registry and Record-office of Seamen is to be established in London, under the Board of Trade, at which the Registrar-General shall keep a Register of Seamen. Lists of crews, with full particulars of the voyage, tonnage, and changes of the crew, are to be made in respect to foreign-going ships on arrival in port, and by home-trade ships half-yearly: and in all cases of loss or transfer, the lists to be sent home within six months. Official log-books must be kept in the form prescribed by the Board of Trade.

Part 4. *Safety, and Prevention of Accidents.*—Life-boats and Buoys, in fixed proportions, must be carried by all decked ships, exception being made for steam tugs and whalers, under penalties not exceeding £100 for the Owner and £50 for the Master. No decked ship shall proceed to sea from any place in the United Kingdom, unless she is provided, according to her tonnage, with boats duly supplied with all requisites for use, and not being fewer in number nor less in their cubic contents than the boats the number and cubic contents of which are specified in the table for the class to which such ship belongs. No ship carrying more than ten passengers shall proceed to sea from any place in the United Kingdom, unless, in addition to the boats herein-before required, she is also provided with a life-boat furnished with all requisites for use, or unless one of her boats herein-before required is rendered buoyant after the manner of a life-boat. Clearance is not to be granted until these provisions are complied with. Rules are laid down to avoid collisions, a breach of which forfeits all right to recover losses. Whenever any ship, whether a steam or sailing ship, proceeding in one direction, meets another ship, whether a steam or sailing ship, proceeding in another direction, so that if both ships were to continue their respective courses they would pass so near as to involve any risk of a collision, the helms of both ships shall be put to port so as to pass on the port side of each other; and this rule shall be obeyed by all steam ships and by all sailing ships whether on the port or starboard tack, and whether close-hauled or not, unless the circumstances of the case are such as to render a departure from the rule necessary in order to avoid immediate danger, and subject also to the proviso that due regard shall be had to the dangers of navigation, and, as regards sailing ships on the starboard tack close-hauled, to the keeping such ships under command. Every steam ship, when navigating any narrow channel, shall, whenever it is safe and practicable, keep to that side of the fairway or mid-channel which lies on the starboard side of such steam ship. Rules are given in respect to the building and equipment of steam ships and the building of iron steamers. Passenger steamers will be surveyed by engineer or shipwright surveyors appointed by the Board of Trade. Every sea-going steam ship employed to carry passengers shall have her compasses properly adjusted from time to time; such adjustment, in the case of ships surveyed as herein-after mentioned, to be made to the satisfaction of the shipwright surveyor, and according to such regulations as may be issued by the Board of Trade. Every home trade steam ship employed to carry passengers by sea shall be provided with such shelter for the protection of deck passengers (if any) as the Board of Trade, having regard to the nature of the passage, the number of deck passengers to be carried, the season of the year, the safety of the ship, and the circumstances of the case may require. And if any steam ship as aforesaid plies or goes to sea from any port in the United Kingdom without being so provided as herein-before required, then for each default in any of the above requisites the Owner shall (if he appears to be in fault) incur a penalty not exceeding £100, and the Master shall (if he appears to be in fault) incur a penalty not exceeding

£50. Such ships are to be surveyed were practicable twice a-year, and no ship is to sail without a certificate signed by the inspector, a copy of which is to be placed in a conspicuous part of the vessel, and in which the condition, capabilities, and number of passengers which the ship is fit to carry, must be specified. Accidents are to be reported to the Board of Trade. This portion applies to all British ships, and to foreign ships carrying passengers between places in the United Kingdom. Provisions are made in respect to dangerous goods.

Part 5. *Pilotage.*—The jurisdiction of the Pilotage authorities, as at present, is continued, subject to the provisions of this Act, for the purpose of determining the qualifications of Pilots, and making regulations for Pilot boats and rates of Pilotage, by bye-laws, under an Order in Council. Powers are also given to make and extend exemptions from compulsory Pilotage, to arrange Pilotage districts. grant local powers, and to establish funds for superannuated Pilots. A power of appeal lies to the Board of Trade. Masters or Mates, when examined and passed, may act as Pilots to particular ships, receiving annual certificates; and the Board of Trade may examine for and grant such Pilotage certificates, if the Pilotage authorities refuse to do so. Compulsory Pilotage applies to home-trade passenger ships between any place in the United Kingdom and the Channel Islands, and the Isle of Man, and within the limits of any district for which Pilots are licensed, unless the Master or Mate have a Pilotage Certificate within the district. Qualified Pilots unable to board are entitled to pilotage if they lead the ship in a boat or other ship. No Pilot can, except on emergency, be taken out of his own district, without his consent, and if so taken, he is entitled to half-a-guinea a day extra payment. In certain cases, unqualified Pilots may act. Provisions are made for the conduct of Pilots both at home and on board. The above provisions refer to general Pilots. With respect to Trinity-house Pilots, the Trinity-house has the same general powers as other pilotage authorities, and may license Pilots in the London district, the English Channel district, and the Trinity-house Outport districts. The Trinity-house Pilots shall give a bond of £100, to which amount and the Pilotage their liability is confined. Subject to exemptions granted by the Trinity-house, Trinity-house Pilots must be employed in the London and Outport districts, when they offer themselves. But ships not carrying passengers, below 60 tons burden, employed in the Coasting Trade, or trading to Boulogne, or places north of that port, or laden with stone from the Channel Islands, &c., or navigating within the limits of the port to which they belong, are exempted. Where Pilotage is compulsory, no Owner or Master is answerable to any person for loss or damage occasioned by the fault or incapacity of any qualified Pilot when in charge.

Part 6. *Lighthouses.*—The Management of Lighthouses, Buoys, and Beacons, is vested in the Trinity-house, in the Corporation of the Port of Dublin, and the Commissioners of Northern Lighthouses.

The Trinity-house may inspect Scotch and Irish Lighthouses, for which purpose the Board of Trade may also appoint inspectors. Lighthouses may be transferred from local authorities. The Light Dues are to remain as at present fixed, subject to revision under an Order in Council. The dues and regulations are to be published, and ships are not to be cleared without production of the receipt for the Light Dues. Powers are given for the construction and alteration of new Lighthouses, &c.

Part 7. *Mercantile Marine Fund.* — A common fund, under this title, is to be established, into which all fees and other sums, except fines, received by the Board of Trade, Light Dues, Lastage and Ballastage monies, and all rates in the Thames received by the Trinity-house, are to be paid. The account is to be kept by the Paymaster-general. Salaries and other expenses of Local Marine Boards, Examinations, Shipping Offices, Surveyors, and Inspectors, under the various parts of this Act, expenses of the general Lighthouse authorities, and for the establishment of Life-boats, &c., along the coast, as the Board of Trade may direct, are to be paid out of this fund. The accounts to be laid before Parliament every year.

Part 8. *Wrecks, Casualties, and Salvage.*—This portion provides for investigations into Wrecks and other casualties; defines the duties of Receivers of Wreck, and the nature of Salvage.

Part 9. *Liability of Shipowners.*—This portion applies to the whole of Her Majesty's dominions. No Owner or part Owner is liable for any loss or damage which may happen without his fault or privity to goods or merchandise by fire on board ship, or to money or jewellery by robbery, unless inserted in the Bill of Lading, with a true description of the nature and value. Nor shall he be liable to any extent beyond the value of the ship and freight due for loss and damage to goods, &c., on board his own ship, or to any other ship, or goods on board it, without his fault or privity. The value of the carriage of goods and passage-money to be considered as freight. The Owner is liable in respect to every such loss of life, personal injury, &c., arising on distinct occasions to the same extent as if no other loss, injury, or damage had arisen. Nothing, however, in these provisions takes away the responsibility of the Owner when acting as Master or Mate.

Parts 10 and 11, relate to the Legal Procedure, the Punishment of Offences, the Recovery of Fines and Penalties, and other Miscellaneous Matters, as Contracts, Expenses, and what other Acts are affected or otherwise by this Act.

THE NORTH-EAST COAL PORTS.

From a return published by the House of Commons, at the instance of Mr. Ingham, M.P. for South Shields, we gather the following facts with regard to the Shipping Trade at the great coal ports on the coast of Northumberland and Durham. It will be seen by the figures that there has been immense activity in those ports during the past year. The numbers and tonnage of ships registered in each port on the 31st December, 1853, were:—

SAILING VESSELS.

—	Under 50 Tons.		Above 50 Tons.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Newcastle	...... 7......	...3,164...	... 695...	...147,782
Shields	......17	... 545...	... 763...	...201,104
The Tyne	......24......	...3,709...	...1,458...	...348,886
Sunderland	......93......	...2,776...	... 832...	...208,891
Stockton	......22......	... 578...	... 135...	... 27,830
Hartlepool	...... 3......	... 17...	... 124...	... 26,777
Berwick	......30......	...1,015...	... 29 ..	... 3,112

In addition to sailing vessels, 98 steam vessels belong to the port of Newcastle, 82 to the port of Shields, and 38 to Sunderland.

The following vessels and tonnage cleared coastwise from the north-east ports during the past year, and from all the other great ports in England:—

SAILING VESSELS.

—	Inwards.		Outwards.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Newcastle.........	...2,132...	163,440	...11,172...	1,502,813
Shields	... 666...	66,468	... 1,413...	151,897
The Tyne	...2,798...	229,908	...12,585...	1,654,710
Sunderland	...1,443...	113,824...	...10,413...	1,330,160
Stockton	... 554...	41,534...	... 2,536...	228,904
Hartlepool	... 327...	25,407...	... 6,584...	854,174
Berwick	... 455...	22,319...	... 312...	17,420
Bristol	...4,120...	194,962...	... 2,479...	105,843
Hull	... 772...	56,133...	... 854...	73,847
Liverpool	...7,046...	522,499...	... 7,090...	467,949
London	19,240...	2,744,524...	... 7,721...	553,452
Glasgow	...1,435...	134,411...	... 2,940...	191,275

Of steam vessels the clearances outwards were—Newcastle, 429; Shields, 23; Sunderland, 134; Stockton, 18; Hartlepool, 30; Berwick, 1; Bristol, 915; Hull, 603; Liverpool, 2,841; London, 1,565; and Glasgow, 1,501.

In the colonial and foreign trade the figures are as follows :—

SAILING VESSELS.

	INWARDS.		OUTWARDS.	
—	British.	Foreign.	British.	. Foreign.
	Tons.	Tons.	Tons.	Tons.
Newcastle.........	150,161...	200,029...	...477,174...	...387,117
Shields	118,770...	41,884...	...106,983...	... 77,743
The Tyne	268,931	241,913...	...584,157...	.. 464,860
Sunderland	144,815...	116,316...	...253,333...	...154,101
Stockton	30,407...	26,333...	... 37,425...	... 39,211
Hartlepool	75,868...	98,858...	...124,368...	...214,344
Berwick	6,579...	3,634...	... 1,192...	... 1,902
Bristol	95,201...	79,653...	... 68,584...	... 39,785
Hull	148,897...	235,941...	... 78,902...	...156,592
Liverpool	940,586...	867,436...	...999,757...	...941,175
London	1,095,326...	1,010,527...	...728,025...	...889,522
Glasgow	84,232...	47,638...	...211,423...	... 64,702

It appears that during last year only six foreign vessels were purchased by owners belonging to the north-east ports.

TRADE OF OUR PORTS.

The following Table shows the number of vessels, and their tonnage, entered inwards at the twelve principal ports of the United Kingdom in the year 1853, and the declared value of British and Irish produce and manufactures exported thence in the same year :—

	BRITISH.		FOREIGN.		EXPORTS.
	Ships.	Tons.	Ships.	Tons.	£
London	...6,261...	1,524,219	...5,502...	1,069,894	22,991,082
Liverpool ...	...2,635...	1,102,955	...1,822...	902,976	47,152,194
Bristol	... 432...	95,201	... 346...	79,653	852,229
Hull	...1,107...	285,641	...1,753...	269,212	10,788,790
Newcastle ...	... 976...	167,404	...1,649...	200,029	1,141,621
Southampton	... 711...	218,567	201...	33,609	2,452,864
Glasgow ...	... 405...	91,144	188...	47,638	4,968,630
Greenock ...	... 275...	94,910	44...	13,764	437,522
Leith	... 335...	59,683	... 896...	87,869	575,067
Belfast	... 217...	40,571	... 229...	41,078	35,981
Cork	... 210...	43,962	... 229...	51,506	129,658
Dublin	... 219...	42,690	... 197...	38,782	23,800
					19,549,388

COMPOSITION FOR SHIP'S BOTTOMS.

In drawing the attention of shipmasters to the value of certain paints, or compositions, for preserving the bottoms of iron, wood, and coppered vessels, from the destructive action of sea water, we beg, in the first place, to state, (lest any should consider us as having a pecuniary interest in their use,) that we are totally unacquainted, (except by name,) with the manufacturers of the compositions of

whose value we now speak. Our attention having been lately drawn to the subject by a huge sheet of testimonials, addressed by both owners and captains of various vessels to the inventors, Messrs. Peacock and Buchan, of Southampton, we wish to add our recommendation to the list, by stating that we have seen the good results of their use on many occasions, more especially on iron ships; the only case of default in our experience having arisen from want of proper care in the laying on, and not giving sufficient time to allow the paint to dry before the vessel was floated.

We recommend a perusal of the paper of testimonials to which we refer, and which we have no doubt Messrs. Peacock and Buchan would be happy to forward to any parties wishing to acquire information on the subject.

UNITED STATES' NEW PASSENGER ACT.

SENATOR FISH, from the Select Committee of the United States' Senate, appointed on the 7th December, 1853, to consider the causes and the extent of the sickness and mortality prevailing on board the emigrant ships on the voyage to this country, and whether any and what legislation is needed for the better protection of the health and lives of passengers on board such vessels, has submitted a bill of which the following is a synopsis.

"Section 1—requires all emigrant passenger ships to have a clean space at all times on the upper deck for a promenade for air and exercise, to be increased in proportion to the number of passengers; limits the number of passengers to two for every five tons of the registered tonnage of the vessels, but without diminishing the space now required for each passenger; in the winter season the number of passengers to be limited to one for every three tons; prohibits the use of the orlop deck for the accommodation of passengers; requires an additional number of privies, and the separation of those for female from those for male passengers; and requires every ship to be provided with a well-supplied medicine chest.

"Section 2—enacts that the carrying of an excess of passengers is a misdemeanour, punishable with a fine of 100 dollars for every one beyond the legal number, and imprisonment at the discretion of the Court; and if the excess amounts to 20 the vessel to be deemed forfeited. Any other violation of the provisions of section 1 to be punished by a fine of 500 dollars for each offence.

"Section 3—makes the captain responsible for the cooking and distribution of the provisions, at stated hours, and under rules to be published by being posted about the ship. The omission to comply with this requirement to be punished by a fine of not less than 1,000 dollars, and imprisonment not exceeding one year. If the provisions are not cooked and distributed, or are distributed in insufficient quantities, or a short allowance of water should be served, each passenger may recover 3 dollars per day for each day of such failure or short allowance, to be recovered as damages.

"Section 4—makes it the duty of the captain to maintain discipline, cleanliness, and order. For this purpose he is directed to prepare rules and regulations for the observance of passengers and crews, which he shall submit for approval to the collector of the port, if in a voyage from the United States; and if in a voyage from a foreign port to the United States, then to the United States' Consul—these rules and regulations to be posted conspicuously about the ship in the English, French, and German languages, before sailing and during the voyage. The captain is empowered to separate disorderly or uncleanly passengers, or those who disobey his orders, or the rules and regulations, from the other passengers to a part of the vessel by themselves. It is made the captain's duty to cause the apartments, beds, bedding, &c., to be kept clean; to prevent improper and all unnecessary intercourse between crew and passengers, and, as far as practicable, without interfering with the ventilation of the apartments, and without the compulsory separation of families, to give to single women berths in a separate part of the ship, remote from the part occupied by the men, and protected against any intrusion or visiting by the crew. If any persons violate the orders of the captain, or the rules and regulations of the ship, the captain may make an entry of the facts in the log book, to be signed by the surgeon, if there be one, the mate, and two witnesses, which being read to the person offending, if he persists, the captain may employ such force as is necessary to insure compliance with his order, and the entry thus made on the log book shall be deemed *primâ facie* evidence of justification by all courts, magistrates, &c.

"Section 5—makes it the duty of the collectors and consuls to examine the rules and regulations, whether calculated for the comfort and health of the passengers, and whether they set forth with precision the hours at which are to be furnished and the mode of distributing the meals, and the quantity allowed for each person or mess, and whether such allowance is sufficient.

"Section 6.—The captain is to furnish to the collector of the port a list—the accuracy of which shall be attested by oath—in such form as the Secretary of the Treasury shall prescribe, stating the name, age, sex, occupation, place of nativity, and place of destination of each passenger; the length of the voyage, tonnage of the vessel, names of all who have died on board, the date of their deaths, the disease or cause of such death, and such other facts as the Secretary of the Treasury shall require; also, the amount of passage-money paid by or on account of each passenger. The omission to return this list, or making a false statement therein, to be punished in the same manner as neglect to deliver a manifest of cargo.

"Section 7.—The collector to furnish quarterly to the Secretary of the Treasury copies of these returns, from which a statement is to be made annually to Congress. The collector is also to furnish, at the request of any foreign consul, copies of the lists furnished by those vessels arrived from ports in the country represented by him.

"Section 8.—If deaths have occurred among the passengers, the captain, within twenty-four hours after making his return, shall pay to the collector the amount of the passage-money received from

each passenger who died, to be paid by the collector to the executor or administrator; and if not claimed within twelve months, then to be paid to such board or commission as may be constituted by the State authorities for the care, &c., of immigrants; but no payment to be made by any board, &c., for the advancement or protection of emigrants of any particular class, nation, or creed. If the passage-money of a deceased passenger has not been paid, the right to recover the same to be forfeited.

"Section 9.—The penalties and forfeitures imposed by this act to be liens on the vessels, for which they may be libelled.

"Section 10—amends the 7th section of the act of May, 1848, so that the inspector's certificate shall cover the requirements of sections 1, 3, and 4 of the act; and that his certificate, when approved by the collector, shall be *primâ facie* evidence of compliance. It also repeals sections 4 and 5 of the act of March, 1819.

"Section 11.—Two children under one year of age to be estimated as one passenger.

"Section 12.—The act to take effect with respect to vessels sailing from the United States in thirty days after its approval; with respect to vessels sailing from Europe, within sixty days after approval; and the Secretary of State to cause notice of the act to be published in foreign ports."

LEGAL DECISIONS.

EXCHEQUER CHAMBER.—*Marine Insurance.—Perils of the Sea.—Pirates, Rovers, &c.—The Ship Victory, of London.*—PALMER AND ANOTHER *v.* NAYLOR AND OTHERS.—(Before the Judges of the Court of Queen's Bench and Court of Common Pleas.)

The declaration was on a policy of insurance, executed by the defendants, as Directors of the Indemnity Mutual Insurance Marine Company, for certain advances, as the cost of transport, provisions, &c., for certain Chinese emigrants, or Coolies, shipped on board the *Victory*, at Cumsingmoon, to be carried to Callao. The perils insured against were, of the "seas," "men of war," "fire," "enemies," "pirates," "rovers," "thieves," and all other perils, &c., in the usual way. The amount fixed to be advanced was £8 15*s*. per head. The declaration averred that, after making the policy, the 360 Chinese emigrants, or Coolies, were, by the agents of the persons interested, shipped on board the *Victory*, to be carried to Callao, for money to be paid to the persons interested in the safe landing of the emigrants—that £8 15*s*. each had been advanced—that such advances were necessary for the transport and to earn certain money, to be earned on the safe delivery of each of such Coolies in Peru—and that the amount of the said monies to be earned on such delivery, and which would have been paid on such delivery, greatly exceeded the amount of such advances; and that afterwards, &c., the *Victory* sailed on her voyage to Callao with the emigrants on board, and whilst she was proceeding on her voyage, and before her arrival at her destination, and whilst she was on the high seas, the Coolies piratically and feloniously assaulted and murdered the captain of the ship and divers of the crew, and piratically and feloniously, and by force, took, stole, and carried away the said ship, and the provisions and cargo of the ship, from the care, custody, and possession of the captain and crew thereof: and forcibly, and against the will of the crew, carried the ship away; whereby and by reason of which piracy, &c., the ship was prevented from arriving, and never did arrive, at the end of the

voyage, and the advances so insured by the policy, and all benefit and advantage therefrom, became, and were wholly lost to the assured.

The defendants pleaded several pleas, the most important being the eighth—that as soon as the Coolies had murdered the captain and some of the crew, and obtained possession, they caused the ship to be steered to the nearest land, for the purpose of being landed, and refused to proceed on the intended voyage; that the ship was then fit and able safely to convey the said Coolies to Callao; and that afterwards, within a few days, they landed and wholly left the ship, and refused to proceed on the voyage; and that the crew and the mate had then the possession, and could have safely navigated her to the intended port of her destination, and were ready and willing to convey and transport the Coolies to Callao, but that they would not—by reason of which refusal, and for no other cause whatever, the transport of the Coolies was never completed as in the declaration mentioned. They also pleaded, ninthly, as to the said taking and carrying away of the vessel, that the Coolies were unwilling to be carried to the port, and that they murdered the captain and some of the crew, and took possession, for the purpose of being landed and escaping from the vessel, and of being carried on the voyage, and for no other purpose, which is the supposed piratical carrying away of the vessel in the declaration mentioned.

Mr. Blackburn urged, in support of the demurrers, that the pleas showed no ground of defence. It will be said that what the Coolies did was not an act insured against, and that it did not cause the loss. Assuming that the act was a piratical act, the loss was complete as soon as the act was committed, although there was a possibility of the ship being retaken, just as if the act had been an act of barratry—(Dixon *v.* Reid). But the act itself was either one of the perils insured against, or included in the general words—as an act *ejusdem generis.* Piracy is, according to Emerigon, vol. I., 516—" *Une brigandage sur mer. La brigandage sur terre est appelé vol on rapine.*" And he cited authorities that *inter piratum et latronem nulla alia est differentia nisi quia pirata depredator est in mari.* So Kent, in his "Commentaries," vol. III. 251, 1st edition, says, " Pirates, rovers, thieves, include the wrongful and violent act of individuals, whether in the open character of felons, or in the character of a mob, or as a mutinous crew. Theft is that which is accompanied with violence. But even if it be not piracy or theft, then it is an act insured against by the general words 'perils of the sea.'" These words refer to perils similar to those which are specified—"Cullen *v.* Buller," "Butler *v.* Wildman," "Phillips *v.* Barber." Now, if this act be not piracy, because done by people on board the ship, and not barratry, because the Coolies were passengers only, it is an act of a nature similar to both, and a peril happening on, and incident to the voyage.

Mr. Bramwell contended that the question was, What is the contract? It is, that the Coolies are to be carried to Callao, and upon their arrival so much is to be paid for each, and the matter insured is the sum so bargained for, so that if the Coolies did not arrive by reason of a peril of sea, the underwriters must suffer. But it is a fallacy to attribute their non-arrival to any other cause than their own unwillingness to go; and since their change of intention induced them to do what is said to be a piratical act, it is in consequence of their unwillingness to go, and not the cause of their not going. It was not a peril which caused the loss, but the change of intention. That it was their unwillingness to go which was the cause of their non-arrival, is shown by the fact that the ship and crew might have taken them after the murder of the captain and crew as well as before. Suppose the ship had been driven on shore, so that the Coolies were obliged to be landed, while the ship was being refitted, and they had subsequently refused to go on board, could that have been said to be a loss by a peril of the sea? Suppose other pirates had carried off the vessel, and then deserted it, so that the Coolies might have availed themselves of the opportunity, and continued the voyage, that would not have been a total loss. So here, there was the means of continuing the voyage had they been willing, and, therefore, the unwillingness caused the loss. No doubt they availed themselves of the opportunity afforded by their own act; but until they so availed themselves there was nothing to prevent them going. "Livie *v.* Jahnson," is similar in principle to the present case. The ship was insured, warranted free from American condemnation; and

having been driven on shore, and suffered partial damage, it was seized and condemned by the American government; and it was held that the underwriters were not liable, either for a partial or a total loss. The capture was the cause of the loss, although it would never have occurred but for the peril of the sea, which drove the ship on shore. The loss was not a necessary consequence of the piracy, but only a possible result. A recapture prevents a capture being a total loss—"Naylor *v.* Naylor." He cited also "Jones *v.* Schmoll;" "Sarguy *v.* Hobson;" "Powell *v.* Gudgeon;" "Arnould on Insurance, II., 762, 1343." But the act here was not piracy; for piracy implies that it is committed by persons out of the ship. Nor was it theft, for it was done *animo furandi;* it was merely taking the ship to escape, like the case of a man taking a horse, and riding a few miles to avoid being arrested, and then letting the horse go.

Mr. Blackburn, in reply, said: It is either an act *ejusdem generis* with piracy or with barratry. As to the main question, whether the act caused the loss, the argument against the insured is based upon a confusion between *causa proxima* and *causa remota.* "It were infinite," says Lord Bacon, "for the law to judge the causes of causes, and their impulsion one on another; therefore it contenteth itself with the immediate cause, and judgeth of acts by that, without looking to any further degree." It might as well be contended that the cause of their unwillingness to go was to be a matter of inquiry. "Hahn *v.* Corbett" strongly supports the present argument. There goods were insured free from capture and seizure. The ship was stranded on a shoal, and disabled from proceeding; but while she lay on the sands she was seized and confiscated as a prize, and it was held that the goods were lost by the perils of the sea. It is not the less a total loss, although it was redeemable by a particular contingency, if that contingency has not happened.

Chief Baron Pollock, in giving the opinion of the Court of Exchequer, and after stating the pleading, said:—The meaning of the ninth plea is perhaps ambiguous, and that ambiguity arises from the new form of pleading adopted in consequence of the new Common Law Procedure Act, and probably it might have been objected to by an application to the Judge. The doubt is whether it means to confess and avoid the allegation of piratically and feloniously stealing, carrying away the vessel, by reason of its arising from the unwillingness of the Coolies to proceed on the voyage, and so not within the perils insured against; or whether it is an argumentative traverse of that piratical and felonious act, viz., that it was not an act of that description, because the vessel was carried away, not with intent to deprive the owners of the property, but solely to prevent the Coolies from being carried on the said voyage. All doubt would have been removed had the old form of pleading continued; for if the last had been the intention of the pleader, the plea would have concluded with a traverse of the piracy and felony. Taking it to mean either a confession and avoidance, or a denial of the piracy, we are of opinion that it is no answer to the action. Considering the defence made by the ninth plea first, and that of the eighth the second, the questions raised on the pleadings are, first, whether the assured are entitled to recover for a loss first occasioned by the act of the Coolies in piratically and feloniously running away with the vessel (for the murder of the captain and part of the crew is, with reference to the present question, immaterial), which piratical act caused the Coolies not to arrive at the port of destination, and so prevented the sum insured from being earned, if the cause of that act was the unwillingness of the Coolies to be carried to the end of the voyage. Secondly, whether, as the Coolies did not arrive at the port of destination, the assured were entitled to recover, if the act which prevented their arrival was not piratical and felonious, but was the taking of the vessel from the possession of the master and crew, and running away with it by the Coolies, for the mere purpose of being landed and escaping from the said vessel. Thirdly, Was the act of piracy, or running away, as the case may be, not the cause of the total loss of the sum insured? because the vessel was afterwards in safety, fit and able and ready to proceed on the voyage, and convey the Coolies if they would have gone; but they would not proceed on the voyage, and by reason of that refusal the transport was not complete. We are of opinion that none of these three circumstances affect the plaintiff's right to recover, and consequently that both the pleas are

bad. The proximate and not the remote cause is always considered, according to the well-known legal maxim expounded by Lord Bacon, "*causa proxima non remota in lege spectatu.*" The act of seizure of the ship, and taking it out of the possession of the master and crew, by the passengers, was either an act of piracy and theft, and so within the express words of the policy; or, if not of that quality, because it was not done *animo furandi*, it was a seizure *ejusdem generis*, analogous to it, or to barratry of the crew, and so falling within the general concluding words of the perils enumerated by the policy. It was a peril insured against, whatever the cause of seizure was, and though the cause of the seizure was no such peril, the above-mentioned maxim applies. The only remaining question is, whether the seizure caused the total loss—not of the ship, for that is not the subject of this insurance—but of the sum insured, which depended on the safe arrival of the Coolies? It is averred that it did, and must be so taken, unless the circumstance that the loss would not have occurred if the Coolies would have returned to the ship, as averred in the eighth plea, makes any difference; we are already of opinion that it does not. They did not return to the ship, and the total loss of the sum insured, *primâ facie*, caused by the seizure of the ship and the escape of the Coolies, never ceased to be what I say was a total loss, so caused; because, presumably, it would not have occurred if the ship had not been run away with, for the Coolies, however unwilling to proceed, would then have remained in safety in their prison, the ship, and been delivered at their port of destination. The running away with the ship was as much the cause of the loss as if the ship had been seized and taken out of the possession of the crew by strangers, and then abandoned, and the cargo had consisted of wild animals, who had escaped, or been let loose by them, whilst they were in possession, and could not be caught again after the captors had abandoned their possession—or as if slaves (when lawfully the subject of insurance) had been conveyed in a vessel that was driven on shore by perils of the sea, and by reason therefore escaped. In both these cases, as in the present, a peril insured against by the policy happened, and in both the consequences of that peril was the loss of the subject insured. Therefore our judgment will be for the plaintiff.

Mr. Justice Coleridge then delivered the following as their lordships' judgment: This was a writ of error upon the judgment of the Court of Exchequer. We have considered this case, and are of opinion that the judgment of the court below must be affirmed, for reasons which we need not state at any great length. In the first place, it has never been contended that the loss, supposing it to have esulted from the causes stated in the declaration, even admitting that modification introduced by the eighth and ninth pleas, was not attributable to the perils stated in the declaration. If it is stated to be the act of the Chinese emigrants, it was the proximate and not merely the remote cause of the loss. . It is admitted that the seizure of the vessel by their taking her out of the power and control of the master and crew, and diverting her from the voyage insured, was either the direct acts of piracy, or acts so entirely *ejusdem generis*, that if not deduced from the general words of the policy, they are included in the general words at the foot of the peril clause. The question then arises on the pleas, and the principle that the proximate cause was to be looked to, was admitted, and insisted upon by both sides, in the argument. The decision in this case depends entirely on the question of fact. What occasioned the loss? This may be answered by determining another. When did the loss occur? If no loss occurred until after the Coolies had restored to the mate and crew the possession and control of the vessel, she being at that time in a fit condition to prosecute the original voyage, and carry them to their destination, their not being so carried to it may be referable certainly to the unwillingness to be so carried, but if the loss was complete as soon as they murdered the captain, and had forcibly taken possession of the vessel, and for a time put an end to the voyage, then the loss of the voyage was referable to their act. And the motive which induced them to commit it, namely, their unwillingness to be carried to the original destination, is immaterial to be considered. We think this latter to be the true view of the case. Nothing was wanting to make the loss complete. A change of circumstances might have preceded it; these never occurred, and may be dismissed from consideration on this short ground. The judgment of the court below must be affirmed.

ADMIRALTY COURT—July 31.—*The Flecha.—Articles supplied to a Foreign Ship.*—(Before Dr. Lushington).—This was a suit promoted by Mr. Bache, a millwright, against the screw steam-ship *Flecha*, to recover the sum due for certain repairs, and also for two screw propellers supplied to her. The *Flecha* was engaged in plying between Belgium and England, and, the screw propeller being out of order, she was fitted with a new one on Lowe's principle, the effect of which, it was said, was considerably to reduce her speed, and thereby cause a much larger consumption of fuel. The screw was returned and a second applied, but, as alleged, with no better result. It was removed from the ship, and deposited on premises contiguous to those of Mr. Bache. The general repairs done to the vessel amounted to £15, which sum the owners tendered in court, but refused to pay for either of the propellers—for the first of which a charge was made of £40, and for the second £30.

JUDGMENT.—The first point to which I shall apply my mind is the question, whether I ought, in compliance with the prayer made by Dr. Bayford, to send this case to be tried by means of a jury? Undoubtedly the Court has the power, in all cases of this description, to direct an issue to be tried before a court of common law, but I really think, where the whole difference between the parties amounts only to a sum of £60 or £70, to send a case of this kind to a jury, would subject the Court to severe censure from those to whom the issue was sent. It was only intended that the Court should exercise this power in important cases, and of considerable magnitude,—certainly not in small cases of this kind. I may also observe that it was not the intention of the parties originally to make a prayer of that kind, for the prayer that was originally made was that I would dismiss the suit, and leave Mr. Bache, if he had a case against the master, to resort to a jury for the purpose of establishing his claim. I next come to the objection raised in this case. It is said, as the jurisdiction conferred on this Court with regard to cases of this description depends entirely on the act of parliament, the facts of this case do not bring it within the true intention and meaning of the statute. The facts are these: this is a foreign vessel, carrying a foreign flag, and trading between Belgium and London, and it is said that that constitutes a distinction, and the Court ought not to consider it within the statute. Now the words, fairly construed, are what must govern my decision in this case. It enacts, "that the High Court of Admiralty shall have jurisdiction"—if I have jurisdiction, I am bound to exercise it—"to decide all claims and demands whatsoever, in the nature of salvage, for services rendered to, or damage received by any ship or sea-going vessel, or in the nature of towage, or for necessaries supplied to any foreign ship, or sea-going vessel, and to enforce the payment thereof, whether such ship or vessel may have been within the body of a county, or upon the high seas, at the time when the services were rendered, or damage received, or necessaries furnished." The first question is, Is not this a foreign ship? Undoubtedly it is a sea-going vessel; and the next question is, Whether the articles supplied were necessaries, or not? I apprehend, looking at the evidence in this case, if the screw propeller became disabled, a new one was necessary for a ship of this kind. Sea-going vessels of this description should be kept in the best possible order for the safety of the lives on board. Dr. Bayford has very properly called my attention to one or two cases in which I have to consider this statute. I have no doubt that I have jurisdiction upon the present occasion, and that I am bound to exercise it. This is a suit brought by Mr. Bache, who is an engineer, for two screw propellers, which it is admitted he has furnished for this vessel. The question is, What would be the ordinary contract between the parties if there were no specified contract? or if there is, then what are its contents? In cases of ordinary contract, a purchaser, (unless there is any fraud) is bound to make payment for the articles he receives. Of course there are many cases, without travelling into them minutely, in which a purchaser may not be bound to make payment—as in case of fraud—and where the articles are not in accordance with the representations made by the vendor. It is alleged, as a first defence in this case, that nothing whatever is due to Mr. Bache; that that which is due to him is covered by a tender, which has been made. It is said that he was not the vendor of these screw propellers, but Mr. Lowe, and if so, he has no *persona standi* in this Court. If Mr. Bache was the mere workman

employed by Mr. Lowe in preparing the screw propellers, then he would be unable to recover any part of the demand now made. But let us see how the matter stands. In a case of this kind I expect to find contradictory evidence. The master swears that he made no contract with Mr. Bache, but entered into a contract with Mr. Lowe. The best evidence, however, is that of Mr. Lowe himself, who declares that no contract was entered into with him at any time; the orders were given by the master to Mr. Bache in his presence, and he had nothing to do with the master, save and except that he allowed his patent to be used. I apprehend the preponderance of the weight of evidence is in favour of the contract being made with Mr. Bache, and not with Mr. Lowe. It is said that there was a special contract, and that its terms were such that this claim ought not to be sustained. It is really most inconvenient, in matters of this kind, to set up a special contract, which is to be proved by parole evidence, and which has not been reduced into writing. The Court would naturally expect that where there are important conditions to be affixed, they would be reduced to writing and signed by the parties. The terms in which it is averred the contract was made are, that unless the speed of the vessel was accelerated, and the expenditure of fuel diminished, the propeller was to be returned. It is said that the speed was not accelerated; that there was delay, and consequently a large expenditure of coals—therefore the contract was not fulfilled. Mr. Lowe, however, says that no such agreement was entered into. It was exceedingly well pressed by Dr. Spinks, that on the former occasion there was a specific contract, and, therefore, on the second occasion the Court would expect to have something in writing. Where there is any great variation from the ordinary course of dealing, there ought to be a document expressing with clearness the intention of the contracting parties. It has been contended in the course of the argument that this new contract was settled on the same basis as the former, but I do not think that the agreements were at all similar. It appears to me, looking at the whole of the evidence, that there is a failure on the part of the defendant to prove a special contract, or to prove the contents of that agreement; therefore, whether the screw propeller was successful or not, does not appear to me to make a distinction on this occasion. A great deal might be said on that subject if it were necessary to enter into it. I am afraid it does not always happen that when a man buys an article it does answer the purpose that was intended beforehand. I am aware that it frequently happens with many patents, that when they come to be put into use, the expectations of all parties are disappointed. The general rule is, that if you take an article with your eyes open, and there is no special contract, you must take it for better for worse. If it turns out successful, so much the better for you; if not, you must put up with it. I now come to the last part of the case, and it is the only point upon which I have felt a difficulty. Screw propeller No. 1, first delivered, was afterwards taken away by Mr. Bache, and nothing more was said of it; there is no explanation offered upon this part of the transaction. The averment is, that Mr. Lowe and Mr. Bache took away the screw, which they retained and still retain, and there is not a single word that I can find in the answer on behalf of Mr. Bache, explaining this fact in any way. I am told now that the party may have it back again, if he thinks fit. Surely there must have been some understanding between the parties as to what was to be done with this article. Generally speaking, if a tradesman takes back an article upon the ground that it does not answer the purpose, no charge is made for that article; I do not say that that rule will prevail in all cases. Now, looking to the whole of the case, and exercising the power which I possess, of doing justice to the utmost of my ability, I shall not order the first propeller to be sent back, but make a deduction of £25, overrule the tender, and direct the claimant to receive for the remainder of his charge; he must also have his costs. The first screw will belong to Mr. Bache; the second to the vessel.

Ship Golconda.—Seamen's Wages in Case of Sickness.—The following decision of the law officers of the Crown upon a case which occurred a short time ago at Swansea has just been made. The question arose at Swansea, whether the master, Thomas Ford, of the ship *Golconda*, was liable for the full wages of Thomas Ishmael, seaman, who had shipped for the voyage out and home from

Swansea to Santiago de Cuba. While at Santiago he became ill and was obliged to submit to a surgical operation for hydrocele, for which the master paid 50 dollars. On the home voyage the seaman only did a few days' duty, and it was contended by the owners that, by the act 7th and 8th Victoria, cap. 112, a reduction of wages ought to take place, as the man was incapacitated for work, and had suffered from the disease before, though he was well at the time of shipping. The Mayor of Swansea thought that the act did not apply to the present case, but wished for the opinion of the Board of Trade. The Lords of the Committee were accordingly informed of the matter, and they referred the question to the Attorney and Solicitor-General, who gave the following opinion:— "We are of opinion that the decision of the Mayor of Swansea was right. It does not appear that the seaman, at the time of shipping himself, was suffering from the complaint (hydrocele) by which he was laid up during part of the homeward voyage; and the circumstance that the man did his duty efficiently during the outward voyage is strong ground of inference that he had no reason to believe that he should be unable to fulfil his engagement. The fact that a seaman has at some prior time suffered from a malady which may or may not recur, but from which he is free at the time of entering himself, is not, in our opinion, sufficient to disentitle him to his wages, if the malady should happen to recur during the period of service. The question, however, must in every case in a great measure depend on the particular circumstances."

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from July 29 to August 29, 1854.

Whalsey Skerries, Shetland—Temporary Lighthouse.—The Commissioners of Northern Lighthouses give notice, that they are engaged in erecting a Lighthouse on the Out-Skerries of Whalsey, on the eastern coast of the Shetland Isles, and that until the completion of the permanent Lighthouse, a Light will be shown from a temporary tower, and will be exhibited for the first time on the night of Friday, the 15th September, and every night thereafter, from the going away of daylight in the evening till the return of daylight in the morning.

The Lighthouse is situated on the eastern part of the Island of Gruna, in lat. 60° 25′ 24″ N., and long. 0° 44′ 20″ W., the Bound Skerry of Whalsey bearing from the Lighthouse about E. by compass. The outer or seaward extremity of the Bound Skerry is about half a mile or thereby from the site of the Lighthouse, so that vessels in rounding the Light must give it a wide berth.

The Whalsey Light will be known to mariners as a Revolving Light, which shows a bright White Light once in every minute. The temporary Light will be exhibited from a tower of timber framework, and is elevated about 108 feet above the level of high water of ordinary spring tides, and may be seen at the distance of about 16 nautic miles, and at lesser distances, according to the state of the atmosphere. To a near observer, in favourable circumstances, the Light will not wholly disappear between the intervals of greatest brightness.

Trinity House, Hull: Grimsby Roads.—A sand or shoal has been for some time past growing up near Grimsby Roads, about Mid-Channel, between the upper end of the middle and the lower end of the Burcum Sands, on the shoalest part of which, at low water of ordinary spring tides, there is now only 17 feet water, and for a large extent from 3 to 3½ fathoms. The shoalest part of the sand has the following marks and compass bearings:—

Grimsby Dock Tower	W. ¼ S.
Lower Buoy of the Burcum.........	W.S.W
The Easternmost Mill at Cleethorps in a line with the hotel there......	S.W. ¾ W.
Upper Buoy of Middle	S.E. ¾ E.
Killingholme Lighthouses nearly in one.	

In consequence of the lower part of the Middle Sand having lately shifted towards the north-west, the Lower Buoy of the said Sand has been placed about ¾ of a mile north-westward of its former moorings, in three fathoms at low water ordinary spring tides. From the south-eastern end of the shoal to the former moorings of the Buoy, there is now a depth of water varying from four to six fathoms. The shoalest part of the Sand is about two cable lengths N.N.W. of the Lower Buoy, with 12 feet at low water. The Buoy is now laid with the following marks and compass bearings:—

Clea Church a little open to the northward of the Beacon............................	W. ¼ S.
Grimsby Dock Tower	W. by N. ½ N.
The Buoy of Cleaness .... between	W. ¼ S. and W. ½ S.
Spurn High Lighthouse....................	S.E. ½ E.
Upper Middle Buoy	N.W. Westerly.

Cerigo Island, Archipelago.—On the eastern side of Kapsali Bay is a Fixed Light in a lantern on a white turret, elevated about 60 feet above high water, which in clear weather may be seen from 8 to 10 miles.

Change in Colour of Light in River Hoogly. Fort William, May 29th, 1854.—With reference to the notification issued from this office on the 6th May, 1851, to the effect that from and after the 15th March, 1852, the Eastern Channel Light Vessel at the entrance of the River Hoogly would show a Bright Red Light, instead of a plain one, to distinguish it from the Gaspar Channel Light.

Notice is hereby given, that in consequence of the change above indicated in the colour of the glass greatly shortening the distance at which the light could be seen, plain glass will be restored to the lantern on and from the 15th proximo, and in order to distinguish the Eastern Light from that in the Gaspar Channel, the former will during the night, from the above date, burn a Blue Light and a Maroon, alternately, every quarter of an hour.

Lighthouse at Cedar Keys, Florida.—A Fixed White Light, with Flashes.—The Lighthouse is placed on the eastern end of the mound on Sea-horse Key, harbour of Cedar Keys, Florida. It is a plain structure of brick, one story in height, painted white. The illuminating apparatus fixed, with flashes every minute, and illuminating the entire

horizon; 75 feet above the sea level; visible in good weather, at the distance of 14½ nautical or 16½ statute miles. The principal object of this Light (though seen in all directions) is as a guide to the main entrance to the harbour of Cedar Keys from the southward. A dangerous reef extends in a south-westerly direction from Sea-horse Key for 12 miles, but by keeping within the bearings of N. and N.N.W. (magnetic), the harbour can be safely entered to within one mile of the Light. The approximate latitude and longitude are—

Lat. 29° 5′ 30″ N.; long. 82° 57′ 30″ W.

The Light will be exhibited, for the first time, on the night of August 1st, 1854, and will continue to be shown every night thereafter from sunset to sunrise.

Alcatraz Island Light, San Francisco, California.—The Light on Alcatraz Island, San Francisco Bay, will be exhibited at sunset on the night of June 1st, 1854, and continued every night thereafter from sunset to sunrise. It is a fixed Light; 160 feet above the level of the sea; illuminates the entire horizon, and should be seen from sea, under ordinary states of the atmosphere, at a distance of 12 miles off the Heads.

NAUTICAL NOTES.

Iron Screw-Colliers.—There are now fourteen screw colliers running between the Tyne and the Thames, and during the month of July they carried 23,587 tons of coals to London, equal to 8 ℔ cent. of the entire importation by sea. Most of them make a voyage every week, and upwards of 4,800 tons of coals were carried by two of them, the *William Hutt* and *Northumberland*, in twenty-eight days. There is also a considerable number of these vessels building in the Tyne and at Blackwall which will be put into this trade.

Danger to a Transport—Caution in respect to Compasses.—The fine new ship *Tynemouth* was on several occasions nearly lost, more especially off Dungeness, and again off Cape Finisterre, and was taken upwards of 100 miles out of her course, and certainly was three days longer on her voyage from England to Malta than she would otherwise have been, had her compasses been correct; but they varied two points, though it was thought every precautionary measure had been taken previous to the vessel's leaving England. Her preservation is due to the great zeal and caution of her commander, Lieutenant Dundas, R.N. The passengers on board describe his anxiety to have been something painful to witness, and so great as to have made him positively ill. The military surgeon on board offered his assistance in a medical way, which he declined, knowing medicine could have no beneficial effect. All observed his anxiety, but for a long time he prudently concealed the cause. At last he told a scientific gentleman on board that he could not trust to the compasses, and was steering by observation. This led to a very strict investigation of the binnacles, and, by the aid of a small magnet, it was found that, in the cover which was put on at night to hold the lights, the bottom was

strengthened by a rim, and inside this rim was inserted a piece of iron wire. This they removed, and immediately the compasses became correct, and thus by a piece of neglect in the maker of the compasses this fine vessel and all on board ran great risk of being lost, and doubtless would have perished, had it not been for the extraordinary care of the captain.—*Daily News, August.*

NEW BOOKS.

The Mate and his Duties. Rockliff & Son, Castle Street, Liverpool.

Such is the title of a little book containing remarks on discipline, the mate's duties towards the master, duties of the watch (sea and anchor,) the most unusual operations and useful suggestions in rigging, directions for repairing, sewing, and cutting out sails, words of command and sea terms in Italian, Spanish, French, and Bengalee, and concluding with some good advice on general conduct. It is a work calculated to be of the greatest assistance to all young officers, not only from the practical hints and suggestions thrown out for their guidance in all the duties they may be called upon to perform, but from the sound and judicious advice it contains as to the regulation of their conduct on all occasions. Officers of every grade will do well to peruse it attentively as they will derive much instruction from it. The writer, (who is a Master in the Merchant Service,) has had considerable experience, and is evidently one of those who has the welfare of his profession at heart.

On the annoyances experienced by young mates he says, that "to maintain, therefore, a proper discipline, depends less on the power of the law than on the character and bearing of the officer. The best qualifications are firmness, almost approaching to obstinacy, and a perfect command of temper; the latter of itself gives a man a great superiority over others who want it. Firmness is what is most wanted by young mates, who sometimes are as much afraid of the grumbling of the men as the dissatisfaction of the master. Often, when a young man can bear a 'blowing-up' from his superior, he would sooner execute the orders that he should issue than be growled at by the seamen. To overcome this diffidence requires a considerable amount of moral courage; it is a fault with most young men. Raised from a situation where there is no responsibility to the charge of a watch, he is too apt to feel over-conscious of his own inexperience, and fancies that every want of judgment and oversight on his part is made the subject of remark and conversation in the forecastle. In this idea he is pretty correct, but it should not annoy him in the least; for let him recollect that, if he was perfection itself, he would not the less be the subject of censure and criticism by the sailors, who, confined in the smallest part of at best a floating prison, can have no other conversation than about the conduct and qualifications of those aft; and perfect indeed must be the man whose character will pass the ordeal of that inquisition blameless. A sailor never gets a wetting that he

does not declare she is the wettest vessel that ever he was on board of, and, whatever work he is engaged in, he feels perfectly convinced that the mate sent him there because he was too long dry.

"The young mate, when he is first placed in the charge of a watch, must recollect that he has nothing to gain from the foremast men, and that it is of little consequence how he may stand in their estimation. Most of them he may never see again, and, though he should not altogether treat them with contempt, he ought to look upon their blame or approval with perfect indifference. If he has strength of mind to do this, there is a great point gained, and it will be the means of saving him much vexation—not that he should be opinionated or go always contrary to the suggestions of seamen, but his conduct should be such as to show them that he is not to be influenced by their opinion in cases where his duty points otherwise, such as making sailing or keeping the yards in trim.

"Complaining to the master should be a last resort; for, if he is often brought into collision with the men, the result is not looked upon as serious by them, and he might be so irritated and forget himself so much as to scold the mate before them. Much might be said to masters on this head; but, as this is not written for *their* instruction, the mate must only endeavour to accommodate himself to all tempers of masters, and be perfectly indifferent to all dispositions of men, neither allowing their remarks to cause him to deviate from a strict line of duty, nor letting them see that they are so hurtful to his feelings as to make him give them extra work; for, if they find that they can 'touch him in the raw,' extra work will not prevent them from doing so.

"There is a very common error that most young mates fall into, and that is to pretend to know more than they really do. One who has just finished four or five years' apprenticeship, the first two of which were, perhaps, spent in the cabin or galley, most part of the remainder in the 'rowse about gang,' is shifted into another ship, and made second or third mate, and put to superintend jobs about the rigging and sails that he never had an opportunity of learning himself, goes a round-about way to conceal his deficiency, which only tends to make it more glaring. Deception, when seen through, is perfectly ridiculous, and is sure of itself to punish the man who practises it.

"He must recollect that when he becomes a mate it is not expected that he must be able to do a job as well as a rigger, but that his education is little more than begun. It is only then he sees how many things he is deficient in—all which he must take the first opportunity of learning, and be perfectly indifferent to the remarks on his deficiency. What is required of him is to see the orders of his superiors executed with care and promptness. All seamen are apt to impose on young officers, and those who get in the watch with one, imagine they must have easy times. If there are many boys in the ship, and at night anything is to be done, most of it falls to their lot, the mate not liking to hear the grumbling of the sailors, which the latter soon find out, and consequently never go to anything without a growl. This is the natural consequence of the want of an experienced

officer over them; but the young mate has not only to fear the sneers of the sailors, but also a 'blowing-up' from his superiors, which is too often done in so public a manner as to let the crew see that he has no friend aft, and, conscious of this himself, he is not anxious to insist upon implicit obedience from the men, well knowing that, if he is obnoxious to them, they will have the satisfaction of seeing him treated with contempt by his superiors. The practice of turning the second mate forward is a very bad one—if he is incompetent, his character should be better known before the situation was filled: but the simple knowledge of the fact, that in any fit of passion the master may send him forward, will make him over cautious of displeasing those who may in a short time be his messmates. A junior mate has but a sorry life in the merchant service, crushed and disheartened by the master and chief mate, and disliking to make more enemies by being strict with the crew, he is every one's servant; and so accustomed to be 'blown-up' for trifles, he gets so nervous as to make great mistakes, and seeks condolence from those he ought to hold in subjection, gradually losing his authority till they are completely his masters."

Our next extract relates to general conduct, the remarks on which are exceedingly well-timed:—

"There is nearly as much depending on the regular demeanour and general bearing of the mate, as on his professional knowledge. Although he may be a good seaman, if in his conversation and ordinary manners he is inferior to the meanest in the forecastle, he may get work done, but will not be respected.

"When he commences a voyage with a new crew, instead of trying to make himself 'look big' by swearing and bullying, interlarding his expressions with gross epithets and obscene similes, he should conduct himself with mildness and decision, sufficiently reserved to be unapproachable by those who are disposed to attempt familiarity, and avoiding the opposite extreme of ridiculous vanity, by aping the officers of the Royal Navy in dress. It is not by this he will gain the respect of any person, and a man of common sense must feel ashamed if, rigged out in a mock uniform, he meets a real one in the street.

"His attire should be at all times neat and scrupulously clean, but avoiding the use of all ornament, for a 'flash' mate is seldom respected by the master, and only ridiculed by the crew.

"In foreign ports he should not do as the generality of English sailors,—quarrel with, and abuse the inhabitants; nor consider that the soldiers and police there are his natural enemies.

"Englishmen in general imagine that when they go from home there is no authority high enough to restrain them, and where they find opposition it is considered as tyranny. The behaviour of English sailors abroad gives foreigners but a poor estimate of the manners and morality of the British nation; as regards the former, every candid observer will acknowledge that our lower classes are inferior to, and in the latter, they are no better than those of any other country.

"The man who has to mix so often with foreigners should have as much consideration for their feelings as for those of his own

countrymen, and in his dealings or disputes with either should be as superior to exultation as to apprehension.

"The leisure hours of the mate might be passed more profitably than in smoking, reading song books, or sleeping. Instead of contenting himself with being a mere tar, he should try to know something more of the scientific principles of his profession than is barely necessary for common requirements. To know navigation perfectly, the course of reading and study to be gone through extends over so many branches of science, that it is impossible for any person to know them well and remain an ignorant man.

"The study of foreign languages would tend much to the improvement of mates; it is the neglect of this that causes the ill feeling that Englishmen bear towards foreigners. How much more comfortably and agreeably does the mate who understands the language get along in a foreign port, than one who roars out in English to the natives, and curses their stupidity for not understanding him? We may see this illustrated amongst the German seamen and those of the Channel Islands, who generally speak two or three languages, and it is well known that they can go ashore in any country without getting into the scrapes that the Englishman is sure to fall into.

"An acquaintance with the principles and application of the steam engine may now be considered a necessary acquirement, for when machinery of such extraordinary power and expense is sent afloat, it, together with those who superintend its working (no matter how clever) must be under the control of the mariner; he ought to be as familiar with its management and its construction as he is with ship building, mast making, or any other business connected with his calling.

"No shoal should be more carefully avoided than the imperceptible steps that lead a young seaman to drunkenness, which will be more difficult to eradicate as he grows older. It is a vice which in youth may be controlled, for young blood and spirits require no other stimulants; but in the old it assumes the nature and appearance of a loathsome disease, upon which no punishment, no shame, can have the least effect.

"There is, perhaps, no vocation, profession, or trade, where experience is of so much importance as that of the seamen; the usual apprenticeship may make a sailor, but not as such as may be trusted from under the direct control of a superior. There are times when a rigid adherence to rules and principles must give place to the exercise of his own judgment, quick decision, and rapid execution. It is a pity then, to see the man who has a great amount of almost instinctive knowledge fall a victim to a vice that will put all his experience in soak, perhaps at a time when it can least be spared.

"It is usually the custom with the ignorant to endeavour to hide their many deficiencies under a feigned roughness of manner and language, which is sometimes very disagreeable to others.'

"That so often-lauded character, 'blunt, honest John Bull,' can hardly expect esteem if his bluntness is nothing but obstinacy and coarseness, and his honesty a rude vulgarity and a total disregard of the feelings of those with whom he comes in contact.

"It is this, together with the very common vice of drunkenness in the British mariner, that makes him hated by and inferior to foreigners.

"All this, with a little trouble, may be overcome; for, though it cannot be expected that a sailor should have all the courtly polish of a man of fashion, yet there is nothing insurmountable to prevent his being, at the same time, the seaman and the gentleman."

The Mate and his Duties should be in the hands of all merchant officers, for young and old may derive benefit from its perusal.

The Practice of Navigation and Nautical Astronomy; by Henry Raper, Lieut. R.N., F.R.A.S., F.R.G.S. Fifth Edition. J. D. Potter, 31, Poultry.

It is now fourteen years since this Work was first introduced to the notice of nautical men, during which time it has been considerably augmented and improved. Of its excellence there cannot be a question —and if we refrain from entering fully into its merits on the present occasion, it is only because we intend to take an early opportunity of discussing the relative qualities of all books of a similar description from which the seaman obtains his knowledge of navigation.

Directory to the Foreign Port Charges, by James Daniel. Fourth Edition. Mrs. Janet Taylor, Minories.

A very useful work, if the information given is correct, as we have every reason to suppose it is from the demand for it. We cannot however say much in favor of the printing, general getting up, &c. Of all the works relating to nautical matters it is certainly the most slovenly—being thrown together, rather than got up. A little care in this respect might be judiciously expended.

Tables to Facilitate the Practice of Great Circle Sailing, and the Determination of Azimuths; by John Thomas Towson. Published by Order of the Lords Commissioners of the Admiralty. Fifth Edition. J. D. Potter, 31, Poultry.

Mr. Towson's Tables are so well-known and appreciated, that it is unnecessary to do more than announce the new edition, in which a slight alteration has been made. In order to render the Tables as convenient as possible, in the distance column for the several degrees of longitude, Mr. Towson has substituted the numbers of miles from the vertex, by which means the distance between the ship and her destined port can be ascertained at once, without the assistance of logarithms.

THE BLOCKADE IN THE BALTIC.

Foreign Office, *August 11th.*

With reference to the notifications of blockades of certain Russian ports in the Baltic Sea, published in the *Gazette* of the 16th of June last and of the 16th of July last, it is hereby notified that the Lords Commissioners of the Admiralty have received further information from Vice-Admiral Sir Charles Napier, K.C.B., commanding her

Majesty's naval forces in the Baltic, from Captain Key, R.N., of her Majesty's ship *Amphion*, senior officer off the coast of Courland, and from William James Hertslet, Esq., British Vice-Consul at Memel, relating to such blockades, which information is as follows—viz., Sir Charles Napier states that—

"On and from the 17th of April last, all Russian ports, roads, harbours, and creeks, from lat. 55° 53′ N., long. 21° 3′ E., to Cape Dager-Ort, in lat. 58° 55′ N., long. 22° 5′ E., including especially the ports of Libau, Windau, Riga, and Pernau, were placed in a state of strict blockade by a competent force of her Majesty's ships.

"On and from the 26th of April last the Russian ports of Helsingfors and Sweaborg, and all Russian ports, roads, havens, and creeks, to the westward of Helsingfors, as far as Hango Head, in lat. 59° 48′ N., long. 22° 53′ E., were in like manner blockaded.

"On and from the 20th of May last the Russian ports of Hafsal, Warmso Islands, Port Baltic, Revel, and all Russian ports, roads, havens, and creeks on the coast of Esthonia, from Cape Dager-Ort to Ekholm Light (situated in lat. 59° 43′ N., long. 25° 48′ E.) were placed in a state of strict blockade by a competent force of her Majesty's ships.

"On and from the 26th of June last the Russian ports of Abo, the islands of Oro Onto, and the Aland archipelago Nystad, Bjorneborg, Christinestad, Wasa, the Walgrund Islands, New Karleby, Jacobstad, Old Karleby, Lohto, Kalajoki, Brahestadt, Uleaborg, Carlon Island, Ijo, Gestila, Kemie, and all Russian ports, roads, havens, and creeks, from Hango Head, in lat. 59° 48′ N., long. 22° 53′ E., to Ned Tornea (included), situated at the head of the Gulf of Bothnia, in lat. (about) 65° 50′ N., long. 24° 15′ E., were placed in a state of strict blockade by a competent force of the allied fleet. On being joined by the French squadron in the Gulf of Finland, on the 13th of June, the duties of blockading in that gulf and elsewhere were henceforward conjointly carried into effect."

NEW CHARTS.

Published by the Hydrographic Office, Admiralty, in August, 1854. *Sold by J. D. Potter, Poultry, and Tower Hill, London; and the principal Chart-sellers; also at the various Custom-Houses of the Kingdom.*

		s.	*d.*
Skagerrack, from Swedish Surveys		2	0
Gulf of Bothnia, „ ...	(seven sheets,) each	2	6
White Sea, Index Chart, from Russian Surveys		2	6
„ „ Gustav Klint		1	6
„ from Russian Surveys, ...	(nine sheets,) each	2	6
„ Arkhangel Bay, from Russian Surveys		2	6
Black Sea, from Russian Surveys	(nine sheets,) each	2	6
Great Circle Sailing and Index, Fifth Edition, by J. T. Towson ...		1	0

EDWARD DUNSTERVILLE, Master R.N.

To Correspondents.—*It is particularly requested that all Communications be sent to the Editor as early in the month as possible.*

All Communications to be addressed "Editor of the Mercantile Marine Magazine, *care of Mr. W. Foster,* 114, *Fenchurch Street, London.*" *N.B.—The real Name and Address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*

THE
MERCANTILE MARINE MAGAZINE
AND
NAUTICAL RECORD.

OCTOBER, 1854.

LOCAL CHARGES LEVIED ON SHIPPING.

THE First Report of the Commissioners appointed to inquire into the Local Charges levied on Shipping in the various Ports of the United Kingdom terminates with the following recommendations :—

1. That a single body of conservators be constituted in each public harbour.

2. That the limits within which each body of conservators shall exercise jurisdiction be determined; and that provision be made for revising these limits from time to time.

3. That all powers necessary for the maintenance and government of the harbour be vested exclusively in the conservators of the harbour.

4. That all property held by the existing authorities of any public harbour, and appropriated to the purposes of the harbour, be transferred to the conservators of that harbour.

5. That all revenues appropriated to the purposes of any public harbour be transferred to the conservators of that harbour.

6. That all dues and tolls on ships, or on goods carried in ships, levied by municipal corporations, or other town authorities, within the limits of any public harbour, be transferred to the conservators of the public harbour within which they are levied.

7. That the debts secured, either partially or wholly, on the property or revenues transferred to the conservators, be a charge on the harbour revenues.

8. That where these debts are also secured on a borough fund, or on rates payable by the inhabitants of a district, the harbour revenues be indemnified against these debts by such borough fund or rates, unless these debts have been incurred for harbour purposes; and that, where requisite, special provision be made to secure to the harbour revenues indemnification from the ratepayers of the town or district against debts which are not secured, or inadequately secured, on a borough fund, or on rates, but which have been incurred for municipal or other town purposes.

9. That the tariffs of the dues and tolls on ships, or on goods, carried in ships, transferred to the conservators, be revised.

10. That the limits within which each such due or toll is leviable be also revised,

11. That provision be made for the future revision of such tariffs and limits from time to time.

12. That exclusive privileges, within public harbours, be abolished.

13. That compensation to individuals, whose vested interests are prejudiced by the abolition of these privileges, be provided from the revenues of the harbour in which the privilege existed.

14. That the conservators of a public harbour be empowered to regulate the supply and removal of ballast within that harbour; but that this power be not exercised for the purpose of obtaining a profit, either by the supply, or by the removal of the ballast.

15. That the passing tolls be abolished.

16. That the Dover harbour debt continue a charge on the remaining revenue of the harbour, and on the property appropriated to the purposes of the harbour.

17. That the annuity of 200*l.* charged on the revenues of Ramsgate harbour, and applicable to Sandwich harbour, cease.

18. That the harbour debts of Whitby and Bridlington be provided for from public funds.

19. That the barque money levied by the Company of Pilots at Dover, the dues and tolls on ships, or on goods carred in ships, levied by the Fraternity of Hostmen at Newcastle, the Trustees of the Totnes Charities, the Trinity-house of Hull, the Trinity-house of Newcastle, the Society of Merchant Venturers at Bristol, and the Russia Company, be abolished.

20. That the vested interests of the officers of these corporations or companies, and of the recipients of their charities, be provided for on the principle adopted in the analagous case of the Trinity-house, Deptford Strond, and sanctioned by the legislature.

21. That the exclusive privileges of the Russia Co. be abolished.

22. That the lights, buoys, and beacons, not being harbour lights, buoys, or beacons, at present supported by the Trinity-house of Newcastle and the Trinity-house of Hull, be transferred to the Trinity-house of Deptford Strond, and supported in the same manner as other sea-lights, buoys, and beacons.

23. That power be given to the conservators of public harbours, to purchase from the proprietors all dues and tolls on ships, or in goods carried in ships, leviable by private individuals within those harbours respectively.

24. That all dues or tolls on ships, or on goods carried in ships, leviable by the conservators of a public harbour, be levied equally, and that all exemptions from, or inequalities in, such dues or tolls be abolished.

25. That all payments from the public funds, under the Reciprocity Treaty Acts, in respect of dues or tolls abolished, transferred to, or purchased by the conservators of any public harbour, cease.

26. That the dues and tolls now levied on ships, or on goods carried in ships, by municipal or other town authorities, within private or proprietary harbours, which are not situate within the limits of a public harbour, be made the subject of special legislation.

27. That in all bills, for amending existing private dock or

harbour acts, provision be made. 1st. That all dues or tolls, leviable by the promoters of the bill beyond the limits of their property, be abolished. 2nd. That all differential dues or tolls, levied by the promoters of the bill, be abolished. 3rd. That all payments from the public funds, under the Reciprocity Treaty Acts, in respect of dues or tolls levied by the promoters of the bill, cease. 4th. That the charges levied by the promoters of the bill, as well as the powers exercised by them for the government of the dock or harbour generally undergo revision.

DEVIATION OF THE COMPASS IN IRON SHIPS.

At the late meeting of the British Association for the Advancement of Science, held in Liverpool, subjects connected with naval science attracted a more than ordinary degree of attention in the sections. Mr. A. Smith read a paper on a "graphic method of correcting the deviation of a ship's compasses," in which he stated that the various observations of the deviations of ships' compasses, made in different latitudes, showed that no artificial correction, by means of fixed magnets or otherwise, could be relied upon when the vessel changed her magnetic latitude; and that even a correction made whilst the vessel was quite new could not be relied upon after the working of the iron in the first storm to which she might be exposed; and also that that part of the deviation which might be caused by horizontal bars of soft iron, (which by theory ought to be constant,) as Mr. Towson would inform them, could not be depended upon. All that could be done was to find a place for the standard compass, removed as much as possible from the influence of iron; and that the ship should be swung at her port of departure, and that whenever an opportunity offered on the voyage, and the observed deviations applied to correct the compass. This might be done in any of the ways now used, or on a beautifully scientific plan, due to Mr. James R. Napier, of Glasgow, which might be called the graphic method. This method pre-supposed that the actual deviation of the ship's standard compass had been observed when the ship was swung; that is to say, when her head was placed on a certain number of points in succession, at equal or nearly equal distances, on the circumference of the card of the standard compass. The method of making these observations was well known. It was that which had for many years been practised in the Royal Navy, and which was fully described in a pamphlet published by the Admiralty, under the title "Practical Rules for ascertaining the Deviations of the Compass which were caused by the Ship's Iron." When the observations described in the "Practical Rules" were made on 32, or even 16 points, they furnished of themselves, and without undergoing any process of reduction or computation, the means of correcting the deviation on any point, with sufficient accuracy for the practical purposes of navigation. If, however, observations were made on fewer points, or if the greatest attainable accuracy be required, then the following problem presented itself for solution:—

" From deviations observed on a given number of points, to find the most probable deviation on any point." The mathematical solution of this problem was not difficult, and when the observations were made at precisely equal distances, the numerical calculations to which it led was neither tedious nor embarrassing. They were described in detail in a pamphlet published by the Admiralty, under the title " Instructions for the Computation of a Table of the Deviations of a Ship's Compass, from Deviations observed on 4, 8, 16, and 32 points," and might be performed without difficulty by any one acquainted with the ordinary rules of arithmetic. The problem might also be solved graphically in the method which would be now described. This solution had the advantage of being equally applicable, whether the points on which observations had been made were or were not precisely equi-distant. It required no calculation, and only a moderate degree of neat-handedness. The solution consisted of two parts—the diagram and the curve. The diagram was the same for all vessels. It might, therefore, be engraved or lithographed, and the navigator should be supplied with a sufficient number of printed copies of it. The curve must in each particular case be drawn by the navigator after the observations of deviation had been made. The diagram consisted of a vertical line of convenient length—say 18 inches divided into 32 equal parts, the divisions representing 32 points of the compass in the following order, beginning at the top:—North, N. by E., N.N.E., &c. The line was also divided into 360 equal parts, representing degrees, and these divisions were numbered from 0° at the top to 360° at the bottom. They were also numbered according to the usual mode of dividing the circumference of the compass card, from 0° at north and south, up to 90° at east and west. The line might, in fact, be considered as the margin of a compass card cut at the north point and straightened. The vertical line was intersected at each point by two straight lines, inclined to it at angles of 60°. One, a plain line, inclined to the right; the other, a dotted line, inclined to the left. Before leaving port, and whenever an opportunity offered in the course of the voyage, the ship should be swung on at least four points. If she was swung on four points only, these should be at or near N.E., S.E., S.W., and N.W. The points next in importance were N., E., S., W. The observed deviations were to be laid down on the diagram in the following manner:—These were to take, on the vertical line, one of the compass courses on which an observation had been made, and lay off the amount of the observed deviation on the dotted line, which passed through it, to the right, if the observed deviation be easterly; to the left, if westerly, and mark the point so determined with a cross in ink, and perform the same operation for each observed deviation. Then, with a pencil and a light hand, they were to draw a flowing curve, passing, as nearly as possible, through all the crosses, which would give the curve of deviations. The correction of the compass by means of this curve might then be required for one of two purposes:—1st, from the compass course which had been steered, to find the correct magnetic course to be laid down on the chart; or, 2ndly, from the correct magnetic course given by the chart, to find the

compass course on which the ship's head onght to be kept. The corrections were given by the following rules:—

"*Rule I.*—From a given compass course, to find the corresponding correct magnetic course. On the vertical line take the given compass course. Move in a direction parallel to the dotted lines till you arrive at the curve, and then move in a direction parallel to the plain lines till you get back to the vertical line. The point in the vertical line at which you arrive is the correct magnetic course required.

"*Rule II.*—From a given magnetic course, to find the corresponding compass course. On the vertical line, take the given correct magnetic course. Move in a direction parallel to the plain lines till you arrive at the curve, and then move in a direction parallel to the dotted lines till you get back to the vertical line. The point on the vertical line at which you arrive is the compass course required."

The only difficulty in applying these rules was to remember, in each case, whether they ought to depart from the central line by a dotted line, and return to it by a plain line; or whether they ought to depart from the central line by a plain line, and return to it by a dotted line. Another mode of looking at the solution was this:— From any point of the curve, they might suppose two lines, one dotted and one plain, to be drawn to the central line; the two points when they intersected the central line represented, the one a magnetic course, the other the corresponding compass course, and the only difficulty was to remember which of the two represents the correct magnetic course, and which the compass course. The difficulty he proposed to remove by the following lines, in which the two rules were versified, being committed to memory:—

"From compass course magnetic course to gain,
Depart by dotted and return by plain."
"But, if you seek to steer a course allotted;
Take plain from chart and keep her head on dotted."

The Rev. Dr. Scoresby contributed a paper on the loss of the *Tayleur*, and the change in the action of the compasses in iron ships. Recapitulating the facts connected with the wreck of the *Tayleur*, which, it will be remembered, was an iron ship, the lecturer remarked that her compasses (three adapted for guidance) were all "adjusted" previous to sailing, by large and powerful magnets, on the principle suggested by the Astronomer Royal; and Mr. Gray, who had charge of the adjustment, reported that they were quite correct. On the third day of the voyage it was discovered, for the first time, that there was a material difference between the compasses. Judging from one of them placed near the helmsman, the captain was under the impression that he was sailing down almost mid-channel, or, at all events, that he was in a good position for navigating the Irish Channel; while the second showed a difference of almost two points. Not knowing which of these was correct, the captain assumed, from certain indications he had noted, that the wheel compass was accurate rather than the other. The result showed that neither was correct, and the Local Marine Board of Liverpool reported to the Board of Trade their belief that the wreck was caused by "a deviation of the compass, the cause of which they have been unable to determine." Now, he (Dr. Scoresby)

at the meeting of the British Association at Oxford, in 1847, had called attention to the instability of the magnetic distribution in ships built of iron. So far back as 1819 he had shown that the adjustment of the compasses of iron ships by fixed permanent magnets was not only delusive, but dangerous; and he now said, referring to the case of the *Tayleur*, that it was an incidental (for he did not contend that it was a necessary) consequence of such an adjustment in this case that the vessel had been brought into so dangerous a position. If the compasses had not been corrected by permanent magnets, the captain would have been in a very different position for securing the safety of the ship. It was a matter well known, not only that iron became magnetic by virtue of the inductive influence of the earth, but that magnetism might be controlled, altered, or destroyed by mechanical action. An iron bar, entirely neutral as to its molecular magnetism, as shown by its being devoid of influence when placed horizontally in an east and west line near a compass, became strongly magnetic when placed upright or proximately so, had its polarity reversed by turning it with the contrary ends downwards, and again became neutral when placed on the horizontal east and west line. If the same bar, while held in an upright position, or inclined in the axial direction of the earth's magnetism, were subjected to percussion, or other mechanical violence, not only did its magnetism become much more powerful than that of simple induction, but it strongly exhibited its augmented polarity when placed in the east and west neutral or equatorial position, and, however it might be moved about or swung round, its polarity remained the same. Having proved these two propositions by experiment, Dr Scoresby went on to apply them to the case of iron ships, and to point out that, in consequence of the percussive action to which the material was exposed while the ships were in course of construction, it became as intensely magnetic as it was possible for malleable iron to be. This augmented magnetism, however, was not permanent or fixed; but, under different circumstances as to the relative deviation of the ship's magnetism and that of the earth, was easily changeable, and liable necessarily to be changed. The magnetism developed by mechanical violence could readily be neutralised, or changed, under a proper change of conditions by other processes of mechanical violence. If the bar of iron magnetized by hammering were held in the reverse direction from that in which the magnetism had been developed, and again hammered, the polarity would not only be altered, but reversed. Again, after well hammering the bar in a vertical position, let it be quickly reversed, the lower end, as hammered, now being upwards, and let one of its extremities be then presented to a delicate compass; the deviating influence in this case would be but small, perhaps a few degrees only, from the influence of the earth's magnetism, it being now augmented to the augmented magnetism of the bar. If, while held in this position, a single blow were struck on the bar with a hammer, the needle would be seen to fly round as if by magic, and settle at a point of deviation perhaps four or six times as great as before. The result of another experiment which had been made with elongated plates of iron, to elucidate the phenomena of mechanical

violence or vibration, had been still more remarkable. Take a couple of iron plates laid together; it was found when their condition was neutral that, held within two or three inches of a compass, horizontally east and west, there was no action whatever on the needle; but, holding the plates upright and bending them, or shaking them with the hand, or merely giving them a vibratory shake, and then presenting them as before to the compass, the iron was found to have become very strongly magnetic, the end which was downward repelling the north pole of the needle. Reversing the position of the plates, while held upright, let the vibratory action be repeated, and the end formerly repelling will now be found to attract the north end of the pole. Repeating the vibratory action, while the plates were held horizontally in an east and west line, the magnetism would be found, on bringing the plates to the test, to have disappeared—all action of the compass having gone. To meet probable objections, he had made experiments on rolled iron plates, of the same kind as those of which ships were generally built, and had ascertained that the magnetism in these also was changeable and controllable like that in bar iron, under the requisite change of position, by vibratory or percussive action. He had also made experiments on a portion of a plate cut out of the side of a ship recently built, and the result of his observations was to establish the fact that, besides the two denominations of magnetism ordinarily received, that of simple terrestrial induction, and that of permanent independent magnetism, there was another denomination corresponding with neither; not being absolutely controllable, like the former, by terrestrial influences, nor capable, like the latter, of resisting all kinds and modes of mechanical violence. To this third denomination he gave the name of "retentive magnetism." The vibration of a ship in a heavy sea was sufficient to change the original magnetism developed and augmented in the course of her construction. A great deal depended on the position in which the ship had been built. In the case of the *Tayleur*, when he first heard of the catastrophe, and read the evidence, he had stated to some friends at Torquay that he would venture to predict that she had been built with her head to the north. He had found, on inquiry, she had been built with her head nearly north-east. Here, then, were the precise circumstances for expecting a change in the ship's magnetic distribution. Having been built with her head to the north-east, she had a certain magnetic distribution, and when she began to strain, with her head to the south-west, that distribution was necessarily changed, and the first effect of it had been to alter the two compasses adjusted by fixed magnets. If the captain had been aware of the changes which might, and most probably would, take place when the ship began to strain in a different position from that in which she had been built—if he had known that the compasses might vary as much as two, or three, or even four points, he would have known, of course, that he must place no reliance upon them. It did not follow, however, that compasses were of no use because, under circumstances, they were liable to change. They ought to be, and were, of great use for all that. But what he wished to impress upon them was, that by

attempting to adjust a transient influence by a permanent influence, they were only aggravating error; that captains ought always to bear in mind this liability of their compasses to mislead them two or three points; that they should be always looking after their correction and verification whenever the sun or a star was in sight, and that, by keeping a compass aloft, as far as possible from the iron of the ship, they would always have a standard to which they would be able to refer, refer, and which he, in his Arctic voyages, had always found to be correct.

Mr. Towson followed up the subject of this paper by remarks upon the "inefficiency of the aids of science at present in connexion with the compasses of iron ships." In the name of the merchants and shipowners of Liverpool he implored the attention of the section to this important subject, not alone in consideration of the vast amount of property involved, but for the sake of the vast amount of human life which was continually being jeopardized and lost. They made their request in the belief that the compasses of iron vessels, if aided by all the appliances which science at present afforded, and adjusted and managed by the most gifted persons whom owners could engage, were still unworthy of confidence. One source of error in the variation of compasses not pointed out by Dr. Scoresby was the change which took place in the inductive magnetism of a ship when she heeled over. In 1846 Mr. Walker, the Queen's harbour master at Plymouth, obtained the permission of the Admiralty to examine the compasses of the *Recruit* when heeling, and the result was that the error from this cause was found to amount to nearly one-half the *maximum* error experienced when on an even beam. He believed that many of the errors in compasses on board both wood and iron ships, which neither the mariner nor the compass-adjuster could account for, were to be attributed to heeling. He thought that the disastrous loss of the *Tayleur* might possibly have arisen from this cause. All the tables of deviations of compasses of ships that had been heeled had the *maximum* amount of error, arising from heeling, when the ship's head was directed within two or three points of the magnetic poles, the same being the point of no deviation when the ship's beam was horizontal. In all cases the north pole of the compass had been drawn towards the point to which the ship heeled. Besides collateral means adopted for correcting the compass there were two systems in use for that purpose—Capt. Johnson's system of swinging the ship and tabulating the results, which was exclusively employed in the Royal Navy, and the Astronomer Royal's method of compensating the compasses by means of magnets, which was almost exclusively resorted to in this port. The objection to Capt. Johnson's plan was, that the corrections were liable to be employed the wrong way. His experience in the examination of about 2,000 masters of merchant vessels had convinced him of the soundness of that objection. There was a general tendency in practice to come to a wrong conclusion on the subject. The mariner knew that westerly deviations indicated that the north end of the needle was drawn to the west, and came to the conclusion that if his compass had a westerly deviation it must cause an object bearing north to appear westerly, whereas it would really appear easterly; and

he had known the same mistake made on board ships in the Royal Navy. The most formidable objection to the Astronomer Royal's system was, that the magnetic poles of the compensating magnets were liable to change or to vary in their intensity. Theoretically this appeared probable, but he had no well-established fact to illustrate it. The change of "retentive magnetism" deviation from heeling and the change produced by going to the other hemisphere were defects common to both systems. According to Capt. Johnson's system, however, the amount of original error was always exposed; while by that of the Astronomer Royal it was concealed from the moment that the situation of the compass was determined on and the ship swung. He had never met with a captain who could tell him the original deviation of his compass. In the case of the *Tayleur* the deviation of her steering compass was 60°, of her compass before the mizenmast 40°. Was there such a case in the Royal navy? Lieut. Pasco, when appointed to the *Jackal*, in 1845, was dissatisfied with a deviation of 45°, and obtained permission of the Admiralty to have the compass replaced; and no doubt the masters of merchant vessels on this point would be equally prudent if they knew what the real amount of original error was. In conclusion, Mr. Towson expressed his cordial concurrence with the observations made by Dr. Scoresby as to the necessity of incessant watchfulness and the danger of implicit confidence, and reiterated his appeal to the section to give the subject its best consideration.

PROGRESS OF THE NEW MARINE DEPARTMENT FOR CARRYING ON METEOROLOGICAL OBSERVATIONS.

THE indefatigable labours of Lieut. Maury in the investigation of the phenomena of the atmosphere and the ocean are already well-known to a large number of the seamen of all civilized nations, and he enjoys a world-wide reputation for the masterly manner in which (from materials comparatively crude) he has solved numerous problems of the highest importance to navigation and commerce, at the same time that he has rendered essential service to science in general. With the assistance of his Sailing Directions, and the Wind and Current Charts, voyages have been shortened, and such parts of the passage as were considered tedious and uncertain from the baffling character of the elements are no longer in the same disfavour as formerly, for the region in which a fair wind may be expected is now better known.

The most striking results of the new system of research, carried on under the superintendence of Lieut. Maury during the last few years, may be briefly stated as follows—

1.—The discovery of a new and better route hence to the equator.

2.—A system of southwardly monsoons in the equatorial regions of the Atlantic ocean.

3.—Ditto off the west coast of America in the Pacific.

4.—The vibratory motion of the trade wind zones, with their belts of calms.

5.—The limits of these have been determined, and the parallels between which those limits are to be found for any month pointed out to the mariner.

6.—The fact has also been made clear, and brought within the compass of demonstration, that the S.E. trade winds are stronger than the N.E.; that they cover a broader belt on the ocean, and keep in motion a greater volume of atmosphere; that at a mean in the Atlantic, the breadth of the band of trade winds is about 22° for the N.E.; and 29° for the S.E.

7.—That in the general system of atmospherical circulation the prevailing winds of the southern are stronger than the prevailing winds of the northern hemisphere.

8.—That the mean temperature of the northern is higher than that of the southern hemisphere.

9.—That the greatest density or specific gravity of the surface waters of the Atlantic ocean is near the parallels of 17° N. and of 15° S.

10.—The causes of the rainy and dry seasons, and the means of telling wherever on the earth's surface the seasons are so divided by nature.

11.—The parts of the ocean in which sperm and right whales most resort have been discovered and pointed out.

12.—The interesting fact in the natural history of this animal has been brought to light, viz.: that the species known to fishermen as the right whale cannot cross the torrid zone.

13.—And that there is a species of whale peculiar to the Arctic ocean; and probably another to the coast of California.

14.—That in certain parts of the Indian ocean the waters are warmer than in any other sea.

15.—That there is a cold current along the coast of China.

16.—And that there are many highly interesting and beautiful anomalies touching the Gulf Stream, the cold and warm currents of the sea, and the distribution of heat over the surface of the land and water.

In addition to these important facts, the indications of many more have been elicited, and by carefully following up the inquiries so admirably begun Nature will willingly unlock the secrets of her rich store house; it is anticipated that future investigations will show—

1.—That the mean temperature of the ocean for any parallel is higher than that of the air for the same parallal at sea, even though a cold current be present.

2,—They afford room to suppose, and themselves suggest the supposition, that the air which the S.E. trade winds discharge into the belt of equatorial calms, after ascending there, flows for the most part over into the northern hemisphere; while that which the N.E. trades discharge into the same belt, passes in like manner over into the southern hemisphere.

3.—That the calms of Cancer and of Capricorn are caused by the meeting of two upper currents; the one from the Pole being dry, the other from the Equator being charged with vapor.

4.—That there is a region of calms near the poles in which the barometer, on a level with the sea, probably stands lower than it does generally on the sea level of the earth; and the inquiry is suggested whether the magnetic pole be not within this region.

5.—That the trade wind regions are the evaporating regions; and that we ought to inquire whether the electricity displayed in our thunder storms does not come from the trade wind regions and go up into the clouds with the vapor from the sea.

6.—That the waters of the Mississippi River and the great American Lakes are rained from clouds, the vapor for which was taken up from the South Pacific Ocean, while the waters of the Amazon and Oronoco are evaporated exclusively from the Atlantic.

7.—That the springs in the ocean which supply the sources of all the great rivers of the northern hemisphere are, for the most part, to be found where the S.E. trade winds blow, in the Atlantic, Pacific, and Indian oceans.

8.—That magnetism is probably an agent in giving direction to the circulation of the atmosphere; and the question is raised if it be not concerned in the currents of the ocean also.

9.—That the "red fogs" of the Cape Verde Islands, and the so-called "African dust" of the North Atlantic, is dust from the basin of the Amazon and Oronoco, taken up by the winds in the dry seasons, and transported in the upper current from the equator towards the pole, that is counter to the N.E. trade winds. This "dust" is known to consist, for the most part, of infusoria, from the river basins of South America, and the microscopic examinations of Prof. Ehrenberg go far to prove that such is the origin of the "red fogs and sea dust."

10.—That the basin which holds the Gulf of Mexico is a little over a mile deep on the average; that the Carribbean sea in the deepest parts is nearly three miles, if no more; that the North Atlantic is more than six miles; the south at least three; and the Gulf stream in the Florida Pass, 500 fathoms deep.

11.—Agencies have been revealed which suggest the conjecture that at the head of the Red Sea, near the isthmus of Suez, the waters are lower, salter, and heavier, than they are near its mouth. That at its head there is a winter and a summer level, and that there is a strong under current from it into the Indian ocean.

12.—That the same whale is found in Behring's Straits, and Baffin's Bay, and the fact is proved that this fish cannot get from the one place to the other except through the Arctic Ocean.

The task of research, which promises to be of such essential service, and which requires the most extended co-operation, is now about to be commenced with the earnestness which such a subject demands. The recommendations of the "Maritime Conference," held at Brussels last year, having been duly considered, and the plans for carrying out those recommendations being nearly matured, we are

enabled to lay before our readers the present condition of the scheme, which is embodied in an abstract, furnished by Capt. FitzRoy, R.N., to the President of the British Association for the Advancement of Science:—

"*Memorandum I.*—The maritime commerce of nations having spread over the world to an unprecedented extent, and competition having arrived at such a point that the value of cargoes and the profits of enterprise depend more than ever on the length and nature of voyages, it has become a question of the greatest importance to determine the best tracks for ships to follow, in order to make the quickest as well as the safest passages. The employment of steamers in such numbers,—the general endeavour to keep as near the *direct* line between two places (the arc of a great circle) as the intervening land, currents, and winds will allow—and the improvements in navigation, now so prevalent, have caused a demand for more precise and readily-available information respecting all frequented parts of the oceans. Not only is greater accuracy of detail required, but much more concentration and arrangement of very valuable, though now scattered, information. Besides which, instrumental errors have vitiated too many results, and have prevented the greater portion of the meteorological observations hitherto made at sea from being considered better than approximations. 'It is one of the chief points of a seaman's duty,' said the well-known Basil Hall, 'to know where to find a fair wind, and where to fall in with a favourable current:' but, with the means at present accessible, the knowledge of such matters can only be acquired by years of toil and actual experience, excepting only in the greater thoroughfares of the oceans, which are well known. Wind and Current Charts have been published of late years, chiefly based on the great work of the United States' Government, at the suggestion of, and superintended by Lieut. Maury; and by studying such charts and directions, navigators have been enabled to shorten their passages materially—in many cases as much as one-fourth, in some one-third, of the distance or time previously employed. Much had been collected and written about the winds and currents by Rennell, Capper, Reid, Redfield, Thom, Piddington, and others; but general attention was not attracted to the subject, however important to a maritime country, till the publication of Lieut. Maury's admirable observations. Encouraged by the practical results obtained, and induced by the just arguments of that officer, the principal maritime powers sent duly-qualified persons to assist at a Conference held at Brussels last year on the subject of Meteorology at sea. The report of that Conference was laid before parliament, and the first direct result of it was a vote of money for the purchase of instruments and the discussion of observations. All the valuable meteorological data which have been collected at the Admiralty, and all that can be obtained elsewhere, will be tabulated and discussed in this new department of the Board of Trade, in addition to the continually accruing and more exact data to be furnished in future. A very large number of ships, chiefly American, are now engaged in observations; stimulated by the advice, and aided by the documents so liberally furnished by the United States' Govern-

ment, at the instance of Lieut. Maury, whose labours have been incessant. Not only does that government offer directions and charts *gratis* to American ships, but also to those of our nation, in accordance with certain easy and just conditions. In this country the government, through the Board of Trade, will supply a certain number of ships which are going on distant voyages with 'abstract logs' (or meteorological registers) and instruments *gratis*, in order to assist effectively in carrying out this important national undartaking. In the preface to a late edition of Johnston's *Wind and Current Charts*, published last June at Edinburgh, Dr. Buist says,—'It has been shown that Lieut. Maury's charts and sailing directions have shortened the voyages of American ships by about *a third*. If the voyages of those to and from India were shortened by no more than *a tenth*, it would secure a saving, in freightage alone, of £250,000 annually. Estimating the freights of vessels trading from Europe with distant ports at £20,000,000 a year,—a saving of a tenth would be about £2,000,000; and every day that is lost in bringing the arrangements for the accomplishment of this into operation occasions a sacrifice to the shipping interest of about £6000, without taking any account of the war navies of the world.' It is obvious that, by making a passage in less time, there is not only a saving of expense to the merchant, the shipowner, and the insurer, but a great diminution of the risk from fatal maladies,—as instead of losing time, if not lives, in unhealthy localities, heavy rains, or calms with oppressive heat, a ship properly navigated may be speeding on her way under favourable circumstances. There is no reason of any insuperable nature why every part of the sea should not be known as well as the land, if not indeed better than the land, generally speaking, because more accessible and less varied in character. Changes in the atmosphere, over the ocean as well as on the land, are so intimately connected with electrical agency (of course including magnetism,) that all seamen are interested by such matters, and the facts which they register become valuable to philosophers. Meteorological information collected at the Board of Trade will be discussed with the two-fold object in view—of aiding navigators, or making navigation easier, as well as more certain,—and amassing a collection of accurate and well-digested observations for the future use of men of science.

"*Memorandum II.*—As soon as the estimate for meteorological expenses had passed, steps were taken to organize a new branch department at the Board of Trade. On the 1st of August, Capt. FitzRoy was appointed to execute the duties of this new office, referring to Dr. Lyon Playfair, of the department of Science and Art, and to Admiral Beechey, of the Marine Department, for such assistance as they could render. As soon as registers and instruments are ready, and an office prepared, Capt. FitzRoy will be assisted by four or five persons, whose duties he will superintend. It is expected that several ships will be supplied with 'abstract logs' (meteorological registers) and instruments in October, and that the office will be in full work next November. The Admiralty have ordered all the records in the Hydrographical Office to be placed at the disposal of the Board of

Trade for a sufficient time. All other documents to which Government has access will be similarly available; and the archives of the India House may likewise be searched. There will be no want of materials, though not such as would have been obtained by using better instruments on a systematic plan. Capt. FitzRoy ventures to think that the documents hitherto published by Lieut. Maury present too much detail to the seamen's eye; that they have not been adequately condensed; and therefore are not, practically, so useful as is generally supposed. His Instructions, or Sailing Directions, (the real condensed results of his elaborate and indefatigable researches,) have effected the actual benefits obtained by mariners. Reflecting on this evil, which increasing information would not tend to diminish, Capt. FitzRoy proposes to collect all data, reduced and meaned (or averaged) in a NUMBER of conveniently-arranged tabular books, from which, at a subsequent period, diagrams, charts, and 'meteorological dictionaries,' or records, will be compiled, so that, by turning to the latitude and longitude, all information about that locality may be obtained at once, and distinctly."

A good *marine* barometer has long been a desideratum for the purpose of rendering any meteorological observations taken at sea useful for comparison with those made on land, as well as being an instrument on whose indications the seaman could rely. This subject, at the request of Lieut. Maury, has engaged the attention of the Kew Committee of the British Association, and numerous experiments have been made during the year under the superintendence of Mr. Welsh. From several forms of instruments the Committee selected one which appeared to them to have all the requisites for making correct observations at sea; and at a moderate cost a barometer will be furnished which combines convenience and accuracy in observing, with simplicity and durability in its general construction. Mr. Welsh, (accompanied by Mr. Adie, the maker) undertook a voyage to Leith and thence to London, with the view of testing the qualities of the instruments, and determining the mode of action and the necessary amount of contraction required in the tube for the prevention, within convenient limits, of the pumping of the mercury. Mr. Welsh states:—

"1st.—Any one of the three barometers is capable of showing *at sea* the changes of pressure, with a probable error of about 0·005 inch, or at most 0·007 inch.

"2nd.—The tremor of a steam-ship is rather beneficial than otherwise to the performance of the barometer, and (leaving the pumping out of consideration) the barometer performs rather better at sea than on land.

"3rd.—For such a motion of the ship as must be very common, the amount of contraction of the tube should be greater than in any of the three barometers employed, say a contraction to eighteen or twenty minutes. The *mean* amount of pumping from ten observations in the return voyage was, for the tube contracted to five minutes, 0·064 in., and for the one contracted to ten minutes, 0·031 in.; the greatest observed being for the former, 0·13 in., and for the latter,

0·05 in. In order, therefore, to reduce the pumping so that the probable error of an observation from this cause may not exceed 0·01 in., the contraction should be to twenty minutes at least.

"4th.—It appears to me very desirable that each ship should be furnished with *two* barometers—one for calmer weather and the other for rougher—the former having the tube contracted to ten or twelve minutes, and the latter to about twenty-five minutes. This would render good observation obtainable in all states of the weather; and if occasional comparisons of the two were taken, would, besides obviating to some extent the inconvenience arising from an accident to one, afford the means of checking any changes which might occur in the zero points of either instrument. If, however, two barometers cannot be supplied to each ship, I am disposed at present to think that a contraction to about fifteen or twenty minutes would be generally the most convenient."

Mr. Welsh subsequently tested the quality of the instruments in a voyage to and from the Channel Islands. At the request of Lieut. Maury, fifty barometers of the required standard have been ordered from Mr. Adie for the use of the United States' Navy, all of which will be verified at the Kew Observatory.

As regards the thermometer, the Hydrographer of the Admiralty having solicited the Kew Committee to determine the form of instrument which they might consider most suitable for the purposes of meteorological observations at sea, Messrs. Negretti and Zambra, and Messrs. Cassella and Co. were selected as those to whom application should be made to furnish such thermometers.

The thermometer is constructed of enamelled tubing, and the divisions are etched on the stem with fluoric acid; the figures are stamped on the brass scale at every tenth degree, and each instrument is fitted to a japanned copper-case with a cup surrounding the bulb, and has a distinguishing number. The cost, in consideration of the quantity ordered from the makers at one time, including the case, is 5*s.* 6*d.*, and without the case 4*s.* 6*d.* for each thermometer. These can be procured in any quantity. One thousand such thermometers have been ordered for the United States' Navy—500 from each of the above-mentioned firms.

The following circular from the Marine Department of the Board of Trade, relating to the same subject, has also been addressed to the Commercial Association and Chamber of Commerce at Manchester:—

"Sir,—I am directed by the Lords of the Committee of Privy Council for Trade to invite the attention of the Manchester Commercial Association to the accompanying report of the conference which, on the suggestion of Lieutenant Maury, of the United States' Navy, was held at Brussels on the subject of establishing a uniform system of meteorological observations at sea, and concurring in a general plan of observations on the winds and currents of the ocean, with a view to the acquirement of a more correct knowledge of the laws which govern the motion of those elements, and to the improvement of navigation. In consequence of the suggestions contained in that

report, Her Majesty's Government has submitted, and Parliament has sanctioned, a vote for instruments, and for the tabulation of logs, and other meteorological records; and Captain FitzRoy, of the Royal Navy, has been appointed to assist this board in the discussion of the observations. The object of the arrangements will be to attain, if possible, such an improved knowledge of the currents of the ocean, and of the direction of the prevailing winds, as may materially diminish the risk and labour of navigation and shorten the duration of voyages. As an acknowledgment for the pains and attention of such masters of foreign-going ships as are willing to co-operate with Her Majesty's Government in this undertaking, and as are competent to fulfil the conditions required of them, it is proposed to place a distinguishing mark against their names in the *Merchant Navy List*, and to give copies of the charts and books which will be printed from time to time from their own and their brother officers' observations, during the time they continue to contribute. These books and charts will contain information as to the prevailing winds and currents in the part of the ocean of which they treat, and of the most desirable tracks to follow, in order to make the surest and quickest passages, and how to avoid or mitigate the violence of hurricanes, &c. And further, to such masters as will undertake to fill up the columns of the abstract logs headed in black, and to mark observations at the hours denoted by the black figures for their successive voyages, the United States' Government have directed to be furnished *gratis* a set of charts and sailing directions of Lieut. Maury, of the United States' Navy, for the part of the ocean they are navigating. In order to facilitate the desired co-operation, standard instruments have been prepared, and may be obtained at a diminished cost, for the use of the merchant navy. My Lords are in hopes that the object of this undertaking and the inducements held out to those who are willing to co-operate in it will be considered by the more wealthy shipping companies and private ship-owners of sufficient importance to induce them to encourage the officers in command of their ships to undertake these observations, and to furnish some, at least, of their masters with the requisite instruments; but, in other cases, in order to render the experiment as extensive as possible, instruments will be furnished by the marine department of this board to masters desiring to have them, and giving sufficient proof of their attainments. The extent to which their Lordships may be able to do this will, however, be limited to the means placed by parliament at their Lordships' disposal, and my Lords are not prepared to pledge themselves to continue it in future years. I am to add, that it is very desirable that any masters of foreign-going ships who may be willing to avail themselves of the privileges mentioned above should communicate with as little delay as possible with this department, either directly, or through the agent appointed for this purpose at the outports. I am, &c. &c.,

"JAMES BOOTH."

WRECKS.

In the last number of the *Mer. Mar. Mag.* we gave a general summary of such data as we had been enabled to procure respecting the wrecks which occur among merchant vessels. In the course of our observations we had occasion to refer to a letter addressed by "The Master of a British Merchant Ship" to the Editor of the *Friend of China*. The writer seems to think that we have not done justice to him, and wishes us to understand that he "disclaims most emphatically the recriminatory process." Now it was not our intention to enter fully into the substance of that letter—our observations referred to a portion of it only. We can fully understand that the writer's principal object was to defend shipmasters against the attacks which have so frequently been made on their competency, (both as regards education and caution,) to be entrusted with the command of a vessel—but that the letter is at the same time recriminatory is no less certain; however we append the letter in full:—

Hongkong,
July 1st, 1853.

Sir,—Enclosed is a list of ships belonging to H.M. Navy which were wrecked or foundered between the years 1793 and 1819, and also a list of wrecks and casualties (or at least of all those that are mentioned in the *Nautical Magazine*,) from the year 1835 to 1851. The hiatus between 1819 and 1835 will perhaps be supplied by some one who may have the means at command for ascertaining.

I have taken the trouble to make these extracts in consequence of the abominable *hue and cry* that has been raised against the British Merchant Service, and to show that accidents may, and do, occur, not only in the *best-regulated families*, but, as all the world are ready to acknowledge, in the best and most efficient Navy in the universe.

Sir, in common with many of my professional brethren who have subscribed for many years to the *Nautical Magazine*, whilst bearing testimony to its general usefulness, and to the valuable information frequently obtained from its pages, I must candidly state, and do not shrink to affirm, that it has often been made the medium of circulation for the most scurrilous, unjust, and unqualified abuse of shipmasters, or master-mariners, or sea-chiefs, or whatever other *soubriquet* its facetious correspondents have thought proper to apply to them.

But notwithstanding those most silly and impotent attempts to reduce the character and characteristics of British Commanders to the most degrading level, I, as one amongst the many, can afford to smile at the absurdity, and at the same time can fearlessly assert that there are not more wrecks or losses—more loss of life and property—more instances of blundering mismanagement—in a word, that there are not more casualties in the British Merchant Navy than there are in any *other sea service belonging to any other nation in the world.*

In the *Nautical's* celebrated "Coroners' Inquests" on defunct merchant ships, and lists of wrecks, it will be observed by every one

conversant in nautical matters that the majority of them are *coasters*, whose occupation leads them, nay, obliges them, to be creeping along shore, and hence the number of distressing accidents, in the winter months especially. I contend therefore that it is monstrously absurd and unjust to attempt forming a criterion of the competency of British shipmasters from such data as the above. And I would here beg leave to suggest to the Editor of the *Nautical* that, in future, in his lists of wrecks, &c., the coasting service should be served up as a separate dish; and we of the "far o'er the sea" service are quite sure we shall be nothing out of pocket or reputation by the transaction.

In proportion to the number of vessels in *actual employment* in H. M. Navy and Merchant Service, it will be seen that there is no great difference after all that has been "sung and said" in the list of casualties which ships, as well as "flesh, are heirs to." That there are fewer vessels belonging to H. M. Navy actually and totally wrecked is, 1st—because they are built strong enough to rough it on the hard rocks a little; as witness H. M. ships *Pique, Formidable, Vindictive,* and *Sphynx,* and a host of others too numerous to mention. 2nd—that when they have the misfortune to get on shore, two hundred, or three hundred men can lay anchors out, and heave a ship off again infinitely easier than the ten or a dozen that are the usual muster at a merchant ship's capstan; and moreover the expeditious method of lightening a ship by throwing overboard all her guns, and then starting water, &c., to facilitate an escape from the rocks, cannot be so successfully resorted to on board merchant ships, for, as before observed, ten or a dozen men cannot perform the work of three hundred, and hence the ship's bottom is knocked out before any such pleasant process of lightening can be adopted.

But, Sir, we sailors are told (vide *Nautical*, 1843, p. 180,) that *ships must not get on rocks or shoals—must not disgrace themselves or their country, by running on shore, let the weather be never so thick, dark, and tempestuous;*—but, on the contrary, if they should by any chance happen to be caught on a lee iron-bound shore on a dismal, dark, thick, murky winter's night and a fearful gale blowing, such as hardly any canvass can withstand, in that case then we are mildly told, that the ships must *lay too* and behave themselves properly, and maintain a *safe* position until the weather moderates, when they can pursue their way again as jauntily as possible, and thank their stars that there are lots of old gentlemen *on shore* who, safely and comfortably ensconced in their easy cosey chairs, have found out the means of extricating a ship from danger under any emergency, and of setting the winds and visitations of Providence at defiance.

That there are many men in command of vessels in the British Merchant Service who are a positive disgrace to it there is no attempt to deny or conceal (and in what profession are there not black sheep?) but surely it should be sufficient for the most rabidly uncharitable that those persons should be treated with the coldness and contempt their conduct merits, and that the really-respectable members of the service might be permitted to enjoy the little leisure time they have, and meet with the respect and consideration due to their position—which permit

me to observe is by no means an enviable one even under the most favorable circumstances.

Sir,—As to the incompetency of which there has been so much carping, I think the rapid passages English ships make, in comparison with those of other nations (American only excepted,) together with the statistical details given to the *Nautical* by the harbour-master of Ramsgate, should satisfy the minds of most people that British shipmasters, taking them *as a body*, are quite able, ready and willing, to compete with the foreign ships, and their captains, which, thanks to the repeal of the navigation laws, are now to be seen swarming about London and Liverpool, obtaining more profitable employment than they could get at home—and doubtless laughing in the sleeve to hear that there are Englishmen patriotic enough to declare that foreign ships and foreign captains are preferable to British ships and British shipmasters. Verily, verily, Mr. Editor, it is a *foul bird that dirtieth its own nest*, for one cannot suppose for a moment that respectable people will be anxious to send their sons to sea if they are taught to consider the Merchant Service in the light in which it is the fashion to represent it. One cannot therefore but conclude that the lash of criticism has been applied indiscriminately on shipmasters *as a body;* for while some are laudably engaged in exposing to public view individual instances of mismanagement, incompetency, tyranny, and inebriety, others there are who are constantly "raising their voices, their most sweet voices," to the uninformed multitude against the Merchant Service in *general;* which permit me to observe, Mr. Editor, is as impolitic and unwise as it is unjust and untrue.

I am, Sir, your obedient Servant,

THE MASTER OF A BRITISH MERCHANT SHIP.

ROUTE FROM AUSTRALIA.

[THE following remarks, from the last edition of Lieut. M. F. Maury's *Sailing Directions*, cannot fail to be acceptable to all Australian traders. When a larger number of abstract log-books have been furnished to that indefatigable investigator, we may expect more important information respecting the route to and from Australia than he has been able to obtain from the comparatively limited data he is at present possessed of.]

The statistics with regard to the winds and currents of the South Pacific Ocean, which the abstract logs of the fleets of vessels that are collecting data for me furnish, compel me to differ from the recommendation of the Admiralty in the *sailing directions* for Australia.

The homeward route recommended in the *Australian Directory* of the Admiralty, and published in 1853, from Australia, is thus described at page 4 :—

"Ships bound from Sydney to Europe or Hindostan, from the 1st of September to the 1st of April, may proceed by the southern route through Bass's Strait, or round Tasmania, easterly winds being found to prevail along the south coast of Australia at that season, particularly in January, February, and March, when ships have made good passages to the westward, by keeping to the northward of 40° S., and have passed round Cape Leeuwin into the S.E. trade wind, which is there found to extend further south than during the winter months. In adopting the southern route, advantage must be taken of every favorable change of wind, in order to make westing; and it is advisable not to approach too near the land, on account of S.W. gales, which are often experienced even in summer, and the contrary currents, which run strongest in with the land. The prevalence of strong westerly gales renders the southern route very difficult, and, indeed, generally impracticable in the winter, although the passage has been performed at that season by ships in good condition, which sailed well; but the northern route, through Torres' Straits, is preferred in the winter months."

Here is a difference as wide as the poles, and as far as the east is from the west. These sailing directions which I am now writing are founded on, in fact they are the results of, the actual experience of navigators, and yet so great is the difference between them and the British Admiralty, the highest authority known in navigation.

They recommend vessels bound to Europe or America, from Sydney, to steer to the southward. The *Admiralty Directory* says, go north.

They advise vessels to go through Cook's Strait, or pass south altogether of New Zealand. The directory of the Admiralty says, go north of New Holland, and pass through Torres' Strait.

They say come east. The Admiralty says, go west.

The same brave west winds which take vessels so rapidly from the meridian of the Cape of Good Hope eastwardly, along the parallels of 50° to 60° towards Australia, will also bring them over eastwardly along the same parallels towards Cape Horn.

The investigations which have been carried on at this office, concerning the winds of that part of the ocean, forbid me to recommend the Admiralty route to any homeward-bound European or American vessel, under any circumstances, whatever; always assuming that these directions are intended for ships that are seaworthy, properly fitted and found. The average passage to Europe, by the Admiralty route, is 120 days. Ships may occasionally find the easterly winds as low down south as the directions of the Admiralty suggest; but it is the exception, not the rule, so to find them. In proof of this, I refer to the Pilot Charts of that part of the ocean, and shall quote other authorities.

To establish this point, I take the abstract log of the *Thomas Arbuthnot*, (G. H. Heaton,) an English trader, from Sydney to London, *viâ* Cape Horn, (1849). This is not a fast ship, yet in forty days from Sydney she had doubled Cape Horn.

Date.	Latitude at Noon.	Longitude at Noon.	Barometer.	Ther. 9 A.M. Air.	Ther. 9 A.M. Water.	Winds.	Remarks.
April 23 ...	41° 07′ S.	179° 54′ E.	29·95	64°	62°	E.	Variable and clear.
„ 24 ...	44 10	177 31 W.	·60	62	59	E. by N.	Moderate and clear.
„ 25 ...	46 27	173 55	30·00	61	58	E. to N.	Strong breezes and heavy rain.
„ 26 ...	47 42	171 24	·10	58	54	N. to N.N.W.	„ „
„ 27 ...	49 04	171 04	·20	58	56	E.	Moderate and clear, a heavy swell.
„ 28 ...	50 01	166 14	·08	58	54	N.E. to N.W.	Steady, strong breezes, and clear.
„ 29 ...	50 14	160 40	29·70	55	53	W.N.W.	„ „ „
„ 30 ...	50 32	154 59	·70	54	52	W.	„ „ „
May 1 ...	50 49	150 22	·80	53	51	W.	Steady, strong breezes, and very cold.
„ 2 ...	50 47	145 02	·70	54	49	W.	„ „ „
„ 3 ...	51 24	139 48	·60	53	48	W.	Steady, hard gales, and very cold.
„ 4 ...	52 04	134 30	·70	52	47	W.	„ „ „
„ 5 ...	52 19	128 35	·75	50	46	W.	Hard gales and very cold.
„ 6 ...	52 48	123 32	·70	50	44	W.	„ „
„ 7 ...	53 11	117 50	30·05	50	44	N.W. to W.	Hard gales, very cold, hazy, and damp.
„ 8 ...	53 40	112 48	·08	50	44	W.S.W. to S.W.	„ „ „
„ 9 ...	54 09	106 37	29·50	50	44	S.W.	Hard gales, much sea, and much snow.
„ 10 ...	54 33	101 34	·35	50	44	S.W. to W.	Moderate breezes and clear.
„ 11 ...	56 06	96 23	·50	45	44	S.W. to S.	Freshening gales, with a high sea.
„ 12 ...	55 21	92 06	·20	43	40	S.S.E. to W.	First part hard gales; ends moderating.
„ 13 ...	56 24	86 38	·22	44	43	W.	Steady, strong winds, heavy squalls, and rainy.
„ 14 ...	56 40	80 24	·50	44	42	W.	Steady, strong winds, heavy snow, and rain.
„ 15 ...	56 40	75 27	·48	46	48	S.W. to S.S.E.	Variable with light rain, ends increasing, and snow.
„ 16 ...	56 52	69 10	·35	40	40	S.	Very heavy squalls, high sea.
„ 17 ...	56 52	65 20	·17	42	38	S.W. to S.S.E.	„ ; 2 P.M. saw Diego Ramirez Island.
„ 18 ...	55 05	60 19	·50	43	40	S.E. to N.W.	Heavy gales with lots of snow.
„ 19 ...	53 21	55 24	·35	42	42	S.W. to S.	Heavy breezes and continual snow squalls.
„ 20 ...	51 15	51 17	·50	42	42	S.E. to S.	„ „
„ 21 ...	49 57	48 23	·48	44	42	S.W. to S.	Moderate and clear.

She did not get those "brave winds" until April 27th, in lat. 49° S. From that time till May 17th, when she was off the Horn, she ran with flowing sheets through these free winds of the west, 106° of long. in twenty days, which gives her the average rate of 5° 18', say 200 miles per day.

The barque *Gem of the Sea*, (A. Bower,) which took the Admiralty route to Australia, and missed the strength of these westerly winds, resolved to avail herself of them from Port Philip to Callao. She accordingly followed very nearly the great circle route, reaching the parallel of 50° S., in about long. 169° E., and not recrossing it until 140° W. (nine days). She arrived at Callao, November, 1853, after the extraordinary run of 37 days from Port Philip. Steam could not have done much better. She had westerly winds all the way, until she reached the parallel of 19° S., long. 83° W. It is unusual, however, to carry these westerly winds so far up into the region of S.E. trades.

Again, the distance home from Australia is very much the same by Cape Horn as it is by the Cape of Good Hope.

It is obvious, therefore, that a vessel, running before these west winds to Cape Horn, takes a route home, which as to time—the true measure of distance—is much nearer than it would be to steer west in the face of these winds. But the *Admiralty Directory* recommends the navigator, it may be said, to go north, to get out of the region of these west winds; to go where the winds are easterly, and then steer west.

In reply, it may be remarked that, by going towards the equator, you go away from the great circle, where the degrees are short, and the distance shortest, into parallels where the degrees are long and the distance greatest; and then the easterly winds are not, for speed, equal to those of the "bonny west" farther south.

These winds are already beginning to be known so well to the Australian traders, that it is usual for them, I am told, when bound home by this route, to strike top-gallant masts before leaving port. It is a voyage that tries ship and crew; but of all the voyages in the world that part of it between the offings of Australia and Cape Horn is perhaps the most speedy for canvass. There it may outrun steam.

I have deemed it proper thus to allude to what I consider faulty sailing directions, because that directory is uttered by the highest authority known to navigators; and because it was necessary to point out wherefore, and wherein, I differ, that navigators may then be enabled the better to choose, each for himself, which of the two to follow.

CONNEXION BETWEEN COMMERCE AND SCIENCE.

It is one of the characteristics of the present age that commercial associations of private persons, receiving from the state no assistance except a sanction for their union, and employing their funds only in the ordinary modes of commerce, have been able to execute works which scarcely any power of the state could attempt, and incidentally

to give to objects not contemplated in their original enterprise an amount of assistance which no direct action of the state could give. The latter advantage has been experienced in numerous instances affecting our social comforts and our constructive arts; it is now felt with equal force in our more abstract science. The history of a late astronomical investigation will illustrate this remark.

The celebrity of the observatories of Greenwich and Paris, and the close connection between the subjects of their observations, made it desirable long since to determine their difference of longitude. About the year 1787 the matter was on both sides taken up by the national authorities, and an expensive and accurate survey was undertaken, the English part at the expense of the British government, and the French part at that of the French government, for connecting the two observatories. This geodetic connection of observatories was the first and ostensible object of the survey, though it led ultimately in England to the construction of our ordnance maps. The difference of longitude ascertained by this expensive process was, no doubt, free from any large error; yet men of science were so little satisfied with it that it was thought desirable to take the earliest opportunity of verifying the result by an operation of a different kind.

In the year 1825 another attempt was made, also at the expense of the state. On the English side it was managed principally by Mr. (now Sir John) Herschel, and Captain (now Colonel) Sabine; on the French side by Colonel Bonne, and some of the most distinguished French engineer officers. The plan adopted on this occasion was to make simultaneous observations on rocket signals at a chain of stations extending from Greenwich to Paris. In spite of all the care which had been taken in preparatory arrangements, this enterprise in a great measure failed. On the English side almost every part was successful, but on the French side nearly the whole labour was lost, and the final result for difference of longitude depended only on the observation of ten rocket signals.

Passing over the attempts made to verify the ancient survey, as well as those made by private persons, to determine the difference of longitude by the transmission of a few chronometers, we now come to the more fortunate enterprise which has suggested the preceding remarks.

No sooner did there appear to be a reasonable prospect of success for the submarine telegraph than the astronomical authorities (the Astronomer Royal on the British side, and M. Arago and the Bureau des Longitudes on the French side) addressed themselves to the Submarine Telegraph Company, with the view of establishing a connection by galvanic telegraph between the two observatories. By that Company their applications were received in the most liberal manner. The Company's wires were placed at the service of the observatories at the hours most convenient for them; the connections of wires, when necessary, were made by the Company's officers; and no remuneration of any kind was expected. For the actual conduct of the observations it was necessary to employ in each observatory a considerable force of galvanic batteries; and the Electric Telegraph

Company, forgetting all commercial rivalry, supplied all that was required at the Greenwich Observatory. The observatories were, in fact, chargeable with no expense except that of laying down their own short junction wires to connect the observatories with the main lines, and that of employing their assistants to make the observations.

The death of M. Arago delayed the French preparations so long that a series of observations directed to a similar object was first carried on with the observatory of Brussels, but as soon as M. Le Verrier was established in the superintendence of the Paris Observatory, the interchange of signals between the Greenwich and Paris Observatories was organised. It is not necessary here to go into details upon the method employed or the extent to which it was carried. It will suffice to say that several thousand signals were interchanged—so many, in fact, as to permit of the rejection of the larger portion, retaining only those (to the number of nearly two thousand) which were considered to be made under unexceptionable circumstances. The contrast of this number with that of the signals on which the determination of 1825 depended is striking. But the difference in the quality of the individual signals is not less striking. The result of a single signal given by the galvanic telegraph is perhaps as accurate as the mean of all the results of the former operation. It is unnecessary, therefore, to say that no comparison can be made between the difference of longitude concluded from the former observations and that found from the mass of the late signals. The former determination is now shown to be erroneous by almost a second of time (a large quantity in astronomy), and this correction is nearly certain to its hundredth part. For this gain of accuracy, this veritable advance of science, we are indebted in the first instance to the power of commercial association of which we have spoken.

The power, however, would have availed little if the possessors of it had not been willing to allow it to be used for the benefit of society in the precise way which the professional men indicated; and it is most honourable to our great commercial bodies that they have practically shown so much readiness to aid in enterprises of scientific character, that accredited men of science feel no difficulty in asking their assistance.

We may congratulate the world on the growing tendency towards a closer union between science and commerce. The advantages to science in such instances as that which has formed the special subject of our comments need no further explanation. The advantages to commercial bodies, though less obvious, are equally certain. It is no small matter that these associations are enabled, without any offensive intrusion, to acquire the character of patrons of science; that the world is ready to acknowledge itself their debtor for assistance not promised in their original constitution. The exhibition of beneficial power, without any prospect of immediate pecuniary advantage, removes the mercenary element which might seem to be engrafted in their original formation, and commerce thus acquires dignity from its friendly union with science.

G. B. AIRY.

LEGAL DECISIONS.

THAMES OFFICE.—*Sea Wages.—Ambiguity in the Ship's Articles.—The Rienzi.*—Capt. William H. Taylor, Master of the ship *Rienzi*, appeared before Mr. Ingham to answer a summons, at the instance of a Chinaman, called Ateh, who claimed a balance of £15 for services as carpenter on a voyage from Calcutta to London. Mr. F. Pelham said, complainant shipped at Calcutta for fifty rupees, or £5 per month, and received three months' wages in advance, and some other payments. The complainant having been sworn to speak the truth, and having broken a saucer, stated that he had been about six months, he believed, on board the *Rienzi*, and had been on board three English ships before he shipped with the defendant. The defendant said the complainant shipped on a voyage from Calcutta to London and back, and had discharged himself. Mr. Ingham read the ship's articles, and said that was so. The complainant was bound to go back with the ship, if defendent required his services, or to be treated as a deserter. He asked if the defendant was going back to Calcutta? The defendant replied that he could not exactly say; he was going to Adelaide, and then to Madras, and he believed the voyage of the ship would eventually terminate at Calcutta. Mr. Ingham said that would be going 10,000 miles out of the way, and that if the defendant was not certain he was going back to Calcutta, he would have to provide the complainant with a passage to Calcutta, or the Board of Admiralty would do so and charge the expenses on the owners. Mr. Ingham then read the ship's articles, which expressed that the voyage was to be from Calcutta to London, to touch at any intermediate ports or places, and finally ending at Calcutta. The ship not to go round the Horn. Duration of voyage not to exceed two years. He thought the articles were bad from uncertainty when the voyage was at an end, and that he must settle the wages here. Ship's articles were intended for the protection of seamen, and ought clearly to set out and define the nature of the voyage on which they were to be engaged. Under these articles the defendant might take the crew up and down the Mediterranean, select the Arctic regions, or proceed to the African coast, and lastly to Calcutta. He found it stated in Symons' Law relating to Merchant Seamen, that, in a case determined since the passing of the statute 5 and 6 William IV., cap. 19, the voyage was described in the agreement in the following terms:—"From the port of London to Swan River, Western Australia, from thence to any port or place in the Indian or China Seas, and during her stay and trade there, until her return to a port of discharge in Great Britain or continent of Europe (in either case the voyage to end in Great Britain), and the cargo delivered, if required, and term of time not to exceed three years." The judge of the Admiralty Court, in giving judgment, said:—"Looking at the tenor of the articles in the present case, I am of opinion that the terms which are used give the mariner no intimation whether he is to winter in the frozen regions of the north, or perform an easy service in the luxurious climate of Naples or Trieste. I am yet to learn that such comprehensive ambiguity is necessary for the purposes of trade; and if not necessary, I cannot believe that a just construction of this statute will impose any such grievance upon the seaman. I am of opinion that the statute does not confer upon these articles a validity which they certainly would not have possessed if framed before the statute passed. I must, therefore, pronounce sentence in favour of the claim set up by the mariners in this case." He (Mr. Ingham) was bound by the high authority of the judge of the Admiralty Court. He could not say the articles of agreement in this case were binding. The complainant did not know where the ship was going on leaving the port of London. The defendant might take the complainant to the Arctic regions, Sierra Leone, or the seat of war. In fact, the articles gave the defendant unlimited power to go wherever he pleased. There were two cases, the *George Home*, and the *Brigstock*, decided by Lord Stowell and Dr. Lushington in the Court of Admiralty, and he must act upon them, and decide that the complainant was not bound to remain any longer with the ship. The articles should have been so framed as to have let the man know where he was going to after leaving the port of London. Captain Taylor said the articles expressed that the voyage was to end at Calcutta, and he thought that was enough. Mr. Ingham should have thought so too if it had not been

the Court of Admiralty. The Act of Parliament required
should be so framed, that every sailor should understand the
ge, and the place or places where the ship was going. The
or the protection of the seaman as well as the Master and
d have been more clearly defined. The defendant said. The
tion of the ship would be Calcutta. Mr. Ingham. That makes
Perhaps if he had known you had been going to Adelaide and
ld not have joined your ship at all. The defendant then raised
that complainant was incompetent, and no carpenter at all. The
could not caulk the ship, and although he had tried it many times
d the caulking irons were taken from him. Caulking was the most
art of a carpenter's duty. There were various other things com-
could not do, and he put him to great inconvenience. In cross-
ion, the witness said that he had tried to get a European carpenter, and
succeed. He inquired for a European carpenter. Complainant was the
rpenter he could obtain. He did not know that a European carpenter
be worth £20 per month at Calcutta.—A gentleman in court reminded the
trate that a European shipped at Calcutta claimed £14 per month in a case
ed a few weeks since in that court, which sum was allowed. The defendant
that was more than the wages of a Master of a ship. The gentleman who
d before interposed said a carpenter from Callao was paid £20 per month.
r. Ingham had some recollection of the two cases. At some ports, when
eamen were scarce, very high wages were obtained. If the complainant was
competent, he would be entitled, of course, to the wages named in the articles;
but if he was incompetent he could not be paid so much. He inquired of the
defendant what he proposed to give the Chinaman. The defendant said the
complainant was not worth 20 rupees per month.—Mr. Ingham said the captain
wanted to cut down the wages rather too low. Mr. Pelham remarked on the
inconsistency of the defendant, who wished to retain the services of the com-
plainant, and then said he was incompetent. It was singular that he should
wish an incompetent carpenter to remain in the ship. The defendant could not
have expected a first-rate carpenter in a Chinaman, and, moreover, he was the
only one he could get at Calcutta. The defendant said he neither wanted to
discharge the complainant nor take him back, and if he did take him back on the
return voyage, it would only be as carpenter's mate. He must take a European
carpenter out with him. Mr. Ingham recommended that the complainant should
go back with the ship, and that the defendant should pay him part of his wages
here. Mr. Pelham said the complainant had to complain of ill-usage on the pa
of the defendant, and would not go back in the ship. After some furth
discussion, Mr. Ingham recommended that the complainant should be paid
and discharged, and that he should enter into new articles of agreemen
carpenter's mate. He inquired if there was any one present who could in
him what were the wages of a carpenter's mate out of the port of London
carpenter of the *Snowdrop* said that carpenter's mates obtained £3, and i
instances £3 10s per month here. The defendant asked if the ar
agreement were invalid as regarded the remainder of the crew? Mr.
said most undoubtedly they were. The defendant asked if he should b
from all liability by discharging the complainant in this port? It mu
lected that he was an Asiatic seaman, and he was bound to take h
Calcutta, or provide him with a passage Mr. Ingham: As you br
take him back, you will be relieved from all further responsibility if
avail himself of your offer. I think you and Mr Pelham had b
some arrangement. After some conversation Mr Pelham said th
not come to any arrangement. The complainant insisted he h
and would not sail in the *Rienzi* with the defendant again.
went into the account, and the defendant said he had supplied
with tools to the amount of £2 19s. Mr. Ingham said that
course, and came to the conclusion that incompetency was pr
defendant credit for £17 19s., including tools, and he direc
complainant £2 more, which would make his wages rathe
per month. Defendant: Is it necessary for him to sign
with me? Mr. Ingham: Yes, it is better to have art

can be no dispute, but I cannot compel him to sign fresh articles. Defendant: Then I shall not be responsible if he is left here? Mr. Ingham: No, certainly not. He leaves without your consent. I would strongly recommend him to go to sea with you, but if he does not I can't compel him. The complainant firmly refused to join the defendant's ship again for any amount of wages, and received the balance ordered, with 2s. costs.

THAMES OFFICE.—*Sea Wages.—Compensation for Breach of Contract.—The Snowdrop.*—Captain Charles Fleming appeared on a summons before Mr. Ingham, to answer a complaint under the 57th clause of the Mercantile Marine Act, commonly called "the compensation clause," and which charged that William Craycroft signed an agreement to serve as a seaman in the ship *Snowdrop*, during a voyage from Plymouth to Trieste and back, and that the defendant had unlawfully discharged him in the port of London before one month's wages were earned by him, whereby he had become entitled to receive, in addition to the sum of £1 3s. 4d. due, compensation for the damage thereby caused to him, not exceeding one month's wages. There were six others of the crew, who had not taken out summonses, in attendance to make similar claims. The complainant shipped at Plymouth on the 23rd of August, and signed an agreement for a voyage to Trieste and back, but, to his great surprise, instead of the vessel proceeding to Trieste, according to the contract entered into, she sailed for London, where they arrived last week, when the defendant said, "Now, my lads, the voyage is up; I have no more to do with you." On Monday the crew proceeded to the shipping-office and obtained their certificates, and, upon asking for three weeks' wages for their services on board, the shipping-master said the month's advance they had each received was quite enough. Mr. Ingham: It is evident the shipping-master did not understand the question. Here is a breach of contract. The seamen shipped for Trieste, and were brought to London. The defendant said that, after the articles were signed, his orders were countermanded, and he was directed to proceed to London. Mr. Ingham asked the complainant to what place he belonged?—he meant his home; to which he replied, Ramsgate—he lived there. He laid out his advance in necessaries for a voyage to Trieste. The defendant said he told the crew if they had a mind to stop he would pay them, but not one answered.—Mr. Ingham said there was a deviation from the contract entered into, and the men could not be compelled to stop.—Another seaman said he belonged to Plymouth, and heard the defendant say he had no more demands on the ship's company, and he also ordered them to proceed to the shipping-office and obtain their discharges.—Another seaman confirmed this statement, and added, that the defendant said that if the crew liked to remain by the ship he would keep them on pay.—The defendant deposed that he did not tell the crew directly after the ship arrived that he had done with them. He inquired of the shipping-master whether he had better keep them on board on pay, and he said, "Certainly, by all means." At 4 o'clock next day the crew were directed to wash decks, and set up the topmast rigging, which they refused to do, and put on their best clothes, and made preparations to go on shore.—The mate confirmed this statement, but he admitted, that when the defendant said, "If you like to stop I will pay you," no one answered.—Mr. Ingham said it was quite evident there was a breach of contract—a deviation from the voyage on which the crew were to proceed, and that they were discharged; and even if they were not discharged they would have a right to leave the ship. The men were actually discharged before the shipping-master, and the case was free from doubt. They were discharged, because the defendant's orders to proceed to Trieste were countermanded. The complainant had expended his advance in an outfit, and was a long way from home, and he was obliged to go to a boarding-house here and contract a bill. The defendant ought to have offered the complainant sufficient money to take him home. He recommended the defendant to make some arrangement with all the men. If he did not he should make an order. The parties then retired, and subsequently an officer of the court said the parties had not come to any arrangement. The men asked for 30s. each, and the defendant had offered them 10s. each only.—Mr. Ingham would recommend the defendant to pay the men £1 each, and if he did not do so in the case of Craycroft, he should order that sum to be paid, with 2s. costs.—

The defendant said that some of the men had only signed for £2 10s. per month, and Craycroft had signed for £3 per month.—Mr. Ingham: The amount of compensation which ought to be paid don't depend on that, but on the inconvenience and loss they have sustained. The men were on board three weeks and have received one month's pay. Give them each £1, and in the case of Craycroft, who has taken out a summons, I shall order 2s. costs. If you don't pay the other men, I shall order summonses, and more costs will be incurred.—The defendant acted on the magistrate's recommendation, and paid each man £1.

City Sheriff's Court.—*Wages.—Ship's Disbursements at Melbourne.*—Wilson *v.* Tindall the younger.—This action was brought to recover £45 5s. 10d., balance of wages alleged to be due to the plaintiff (Thomas J. Wilson) for services rendered as Master of the brig *Medora.*

It appeared that in 1851 the plaintiff went into the employ of the defendant as mate. After some servitude he was appointed Master of the brig *Medora.* She went a voyage to Lisbon, which turned out satisfactory, and the plaintiff was then directed to take command of her to Melbourne, and not to bring her back if he could get a purchaser for her, and then he was to return to England. There was no agreement as to the amount of wages he was to receive. After a somewhat indifferent passage, the brig reached Melbourne, the cargo was disposed of, and in October, 1853, the *Medora* was sold for £850. The plaintiff then proceeded to live on board the *Kangaroo,* and as a passage back to England by a vessel not belonging to the firm would have involved an expense of £50 or £60, he thought it best to wait and return in the ship before named. From some cause the *Kangaroo* was detained at Melbourne until January of this year before she departed. The plaintiff, however, was not in any way accountable for the delay, and while he was on board, and during the passage, he rendered service to the defendant, in giving advice and assisting the working of the ship. The *Kangaroo* arrived in May, and the plaintiff would be entitled to fourteen months' wages, at £12 per month, which would be proved to be a fair and reasonable rate of remuneration—viz., from the 21st of March, 1853, to the 21st May, 1854. Deducting what the plaintiff had received on account, the balance of wages due was £45 5s. 10d., for which the action had been brought. The defendant had objected to pay the amount upon grounds difficult to understand. It could not be said that the plaintiff had not conducted himself to the satisfaction of the defendant, who had given the captain a very flattering testimonial, and neither could it be urged that the plaintiff had not observed much discretion while at Melbourne in returning in the *Kangaroo,* and so preventing the owner being put to an unnecessary expense. Such were the facts. The plaintiff had performed his duty to the defendant fairly and properly, and was entitled to a verdict.

The plaintiff: In November, 1852, I went my first voyage with the *Medora* as Master to Lisbon and back. All the accounts of that voyage were settled, I was then appointed to take command of her to Australia. There was no agreement made as to the salary I was to receive. I expected the same remuneration as other shipmasters. Had a letter of instructions as to how I should dispose of the vessel at Melbourne. It was dated March 24, 1853. I sailed from London, March 24, arrived at Melbourne in the middle of August, but did not sell the vessel until the middle of October. She was sold for £850. After I sold her I went on board the *Kangaroo,* lying in Hobson's Bay. I remitted the whole of the proceeds of the ship to the defendant—made no deductions. I drew of Mr. Henty, the defendant's agent. If I had returned at once after I had sold the ship, it would have cost me £60 or £70. Staid on board the *Kangaroo* several weeks before she sailed. I went on board as a passenger. Sometimes I was away two or three days together attending to business. At that time there was nothing for me to do on board. She sailed for England on the 10th of January in this year. I acted as second mate from the Cape home. We arrived in London on the 21st of May. I rendered the *Medora's* account to the defendant three days after I arrived. No objection was made except to my wages. I drew £20 as soon as I came home, and the defendant paid it. He gave me this testimonial—(It was read).—Cross-examined: When I got the testimonial I had not made any claim for wages. I sold the vessel through an agent. Mr. Henty is defendant's agent at Melbourne. I had the power of

attorney, which I gave up to him. He advertised the vessel for sale, conducted the sale, and remitted the money. That is the account I sent home. I did nothing more than sign the transfer of the ship. Went with the *Medora* to Lisbon at wages of £9 per month. My cabin was found for me. In the first account I rendered to the defendant after I came home there was no charge for wages. There was a charge of £45 for my expenses at Melbourne. In the second account which I sent in there is a claim for wages. The *Kangaroo* arrived before the *Medora* was sold. When I left my own vessel I went on board the *Kangaroo*, and made it my home. Everything was found me.

Mr. George Walker, shipowner: I pay masters of ships £8 per month wages, £5 per month to find the cabin with everything, exclusive of the usual allowance of the ship, and 5 per cent. commission on the nett profit of the voyage. The commission of the voyages varies considerably. I have paid £50, and sometimes nothing at all. Cross-examined: It often happens, unfortunately, that no commission at all is earned. I believe it has been the case lately with the Melbonrne trade. I have had a ship out three years without earning any profit. If the cabin is allowed at the expense of the shipowner, there would be no £5. I should not say that £9 was sufficient wages for a voyage to Australia, but I think £12 is excessive.

Mr. Needham (for defendant) then addressed the jury, and submitted that there was no distinct agreement that the wages of the plaintiff should be £9 a month. What was the case for the plaintiff?—a set of improbabilities. Could any one in their senses imagine that the defendant had done as had been stated by the plaintiff. The jury were asked to believe that he was entitled to £12 a month, as a reasonable amount of remuneration. There was obviously an implied agreement between the parties that they should go on as in the former voyage; that was evident throughout the whole transaction. If the plaintiff thought otherwise, why did he not address Mr. Tindall and object to go on the same rate of wages, and that he must have an increase? Not a single fact had been adduced to show any arrangement to change the old agreement. But what was the plaintiff's own case. He had called as a witness Mr. Walker, a shipowner of considerable experience. He had stated what pay he gave his captains, and they would find that it clearly approximated to what Mr. Tindall had given the plaintiff. If the jury should think that the plaintiff was entitled to recover for the £9 a month, there would be a balance of some £2 or £3 due to him; but against that he had to submit that the charge of £45, which had been put as expenses of the plaintiff at Melbourne, could not be enforced against his client. It was said to be ship's disbursements—but had any voucher or memorandum been produced to show that such was the fact? How had the money been expended? What right had he to incur such an expense upon the owner? How could he have been put to such an outlay? As soon as the *Medora* was sold he went on board the *Kangaroo*, where everything was found for him. If the jury should think that a balance of a few pounds was due to the plaintiff, then he trusted that they would also look into the expenditure of the £45 at Melbourne: and if they should think that it was an extravagant amount, and ought not to have been incurred, then it would more than cover the balance, and their verdict would be for the defendant.

The judge, in summing up, said: Was there an agreement that the plaintiff's rate of wages should be £9 a month or not? They found that the plaintiff had been raised from being a mate to the Master of the *Medora*. He went a voyage to Lisbon and back at the wages stated, and then almost immediately afterwards he was sent with the vessel to Australia. Nothing appeared to have been said as to his increase of wages until he came back, and then he was anxious to leave his owner and go in another ship. He made the claim the subject of the present action. They had heard the evidence, and it was for them to say whether he had proved his right to the increase. Then, if they should not, but yet consider that a small balance was due to him upon the £9 a month, they would direct their attention to the item of £45 as ship's disbursements in the account. It had been said that it was an extravagant sum, and ought not to have been incurred, and that if the jury should think so also, of course that sum would cover the balance due on the £9 a month.

Mr. Thrupp (for plaintiff) contended that the £45 ought not to be introduced into the case at all; it must be the subject of a separate action if it was considered wrong; and he wished his honour to take a note of his objection.

The judge said the question for the jury to decide was, what wages were due to the plaintiff? and it was only by reference to the accounts that they could ascertain it. The real questions for the jury to determine were—whether the plaintiff's rate of wages was £9 or £12 per month? and whether the £45 stated in the account was *bonâ fide* incurred in the expenditure of the ship?

The jury consulted for a short time, and found a verdict for the plaintiff—£3 5s. 10d. They agreed that his rate of wages was £9 per month, but declined making any deductions in respect to the £45, as the defendant, by giving the testimonial after the account which contained the charge had been rendered, so recognised it.

PORTSMOUTH, Sept. 6th.—*Illegally entering Men on Board Merchant Ships.*—The following case was heard before the borough magistrates:—

Capt. Harris, H. M. S. *Illustrious*, attended to prosecute, assisted by Mr. Swainson, Admiralty solicitor; and Mr. Low, solicitor, of Portsea, appeared for the defendant.

James Clark, a waterman, belonging to Gosport, appeared to answer to an information, laid under the 8 & 9 Vict., cap. 116, entitled an "Act for the protection of seamen entering on board merchant ships," in having "provided and supplied a seaman named John Oram to a merchant ship," he not having a license to do so.

Mr. Swainson, in opening the case, read the preamble of the act, and the clause, that bore upon the case. The man Oram was a seaman belonging to the *Sea-Lark*, tender to the *Illustrious*, and he had leave of absence from Friday evening, the 25th ult., till Saturday morning. He did not return to the *Sea-Lark* on the last-named day, and then it transpired that he had entered on board the merchant ship *Blenheim*. A fast steamer (the *Vivid*) was sent after the *Blenheim*, which she overtook off St. Katherine's Point. Oram, together with two other seamen of the *Illustrious*, were found on board, and brought back.

John Oram, ordinary seaman, belonging to the *Sea-Lark*, tender to the *Illustrious*, deposed to having had leave of absence from Friday night, the 25th ult., to the following day. On the following Saturday, about three in the afternoon, George Gardiner, another seaman of the same ship, and himself, met defendant, who said, "I could make a good day's work out of you two, if I could get you." He also said, "Do you want a ship?" Witness replied that "he didn't know that he did—he belonged to the *Sea-Lark*." He then replied, "There's a nice East Indiaman wants eighteen men; she's just going away to Calcutta." Defendant then invited them into a public-house, where they had a quart of beer. Defendant then induced them to go out to Spithead to the *Blenheim*. Before they got out they met the captain, when Clark said, "Here are two smart young fellows—will just suit you." The captain asked if they were able seamen. They replied they were ordinary seamen. The captain replied that he had plenty of ordinary seamen. Clark had some private conversation with the captain, after which he took them on shore to the Quebec hotel, where they met the captain of the *Blenheim* and the owner. Witness and his companion then put down their names. They shortly afterwards parted with defendant, who said, "Be sure you are down in the morning, as I want you to see the owner." Clark also told them to look out for some more chaps. They did so, and found another man, named Mason. The three went together on the Sunday morning with Clark to the Quebec hotel, when the owner told them they must call again on the Monday morning, as he could give them no answer then. On Monday, Clark, who was always looking out for them, again took them to the Quebec hotel, two more men having by this time joined them. The owner was not, however, at the Quebec hotel, and they went over to a beer-house, where they stopped two hours. They then met with the owner in the street, when Clark asked him if he had heard from London. The owner said he had not; on which Clark said, "Do you mean to take these three chaps?" The owner replied "he did, but he could say nothing about the other two." Clark afterwards borrowed one shilling, to give them something to eat, which they had opposite Victoria pier. They

stopped there till late at night, and before leaving arranged with Clark to be at the Victoria pier the following morning at seven o'clock, the latter telling them to be sure to be there, or he should be money out of pocket. Witness did meet him, and went with him to the Custom-house; the other seamen were with them. They there signed their names to go on board the *Blenheim* Indiaman. A person gave them an advance-note for £1 15s. each. They took the note to Mrs. Pierce, in High-street, the agent of the owner, who gave them the full amount for their notes. They then bought some blankets and clothes, and went to two beer-houses, after which they went straight on board the *Blenheim*.

In cross-examination the witness said he had been in the navy since January last. Witness, when he first met Clark, was going on board his own vessel, the *Sea-Lark*. Witness did not tell Clark that he was a deserter from the *Illustrious;* nor did he say so to the captain of the *Blenheim*. He knew he was a deserter at the time, and he had been kept in irons. At the Custom-house the witness told the clerk that he had belonged to a collier; he did not tell the captain of the *Blenheim* this. The captain must have known they belonged to the navy, because himself and the other two were all dressed in naval uniform. When he first saw Clark, he (witness) had a cap with a band, on which was written the name *Illustrious*, but the letters were obliterated, and could not be read.

A youth named Pierce (son of Mrs. Pierce), the agent for the owners of the *Blenheim*, deposed to defendant having received 15s. from Mrs. Pierce for shipping three men on board that ship, and for which witness produced a receipt from defendant.

This being the case for the prosecution, Mr. Low, for the defendant, said he could not gainsay the evidence or the charge, but he thought the government might be satisfied with a conviction on this information, without pressing the other five informations that had been taken out against his client. The Admiralty did not, he presumed, wish to inflict a vindictive punishment, but only to make the law, which had never been put in force at this port before, known; and to make an example to prevent for the future such practices as those in question.

On the suggestion of Mr. Swainson, defendant pleaded guilty to the other five informations. Two of these were the same as the above stated case, viz., for having illegally provided and supplied two other men, Mason and Gardiner, to the *Blenheim*, the penalty in each case being £20, or six months' hard labour. The three other informations charged defendant with having received 15s. for shipping Mason and Gardiner, the penalty for each of these offences being £5.

The bench fined defendant £15 with costs on the first information, or four months' hard labour; and one shilling, or one day's hard labour, on the others.

Northern Circuit, Liverpool.—*Liability of an Emigration Agent.*—Steel *v.* Schomberg.—This was an action to recover damages sustained by the plaintiff by the undue exercise by the defendant of his office of Emigration Agent at this port, to which the defendant pleaded "Not guilty by statute." It appeared that the plaintiff is a shipowner in Liverpool, and the defendant is Captain Schomberg, the government emigration officer at the same port; and the question to be decided was his power to reject a ship intended and proposed for an emigration vessel, that question depending on the construction of the Passengers' Act, 15th and 16th Vict., c. 44. The facts were, that the plaintiff last year purchased the ship *Miltiades*, of 674 tons burthen, then afloat and on her voyage from Callao with guano. On her outward voyage she had taken out emigrants under a charter from government. On her arrival in the Mersey the plaintiff had her carefully surveyed, when her coppers were quite good, and she was not in the least strained. Thereupon the plaintiff determined to send her with emigrants to Melbourne, and took the necessary steps, and gave information of his intention to the defendant, and she was placed on the gridiron to be surveyed. After she had been examined, she was taken into the Prince's Dock, the plaintiff having no idea that any objection would be raised against her, and the loading of her cargo was nearly completed when the plaintiff, who was then in London, received a telegraphic message, in consequence of which he returned to Liverpool and waited on the defendant, who told him that he could not allow the vessel to proceed, as she was too deep in the water. She then drew 16 feet 6 inches, having all her cargo on board except the passengers' provisions, which would

make her draw six inches more, being two feet less than on her voyage home. The plaintiff remonstrated against the defendant's decision, and offered to have the vessel surveyed by surveyors appointed by the defendant himself. The defendant replied that he believed he was the sole person who had to decide the matter under the Act of Parliament. The plaintiff then applied to the Emigration Commissioners in London, and, they having decided that the defendant was justified in his objection, the vessel had to be lightened by unloading a part of her cargo. The nature of the cargo was not objected to by Captain Schomberg, but its quantity was; and for the plaintiff it was contended, that as it did not consist of any goods prohibited by the Act of Parliament, the defendant had exceeded his duty in the course which he had pursued. The plaintiff was examined, and proved the above facts, estimating his loss at £1,048 17s. 6d. He admitted the uniform courtesy of Captain Schomberg, and that the *Miltiades*, in her former voyage with emigrants under the government charter, drew only 15 feet water. Mr. Knowles contended that the defendant was perfectly justified in the course he had pursued by the 26th section of the act, which empowered him to object to whatever endangered the safety of the ship and passengers, and that there could be no doubt that by a ship drawing too much water, the safety of both the passengers and ship was endangered. The learned judge assented to this view, and ruled that the defendant was entitled to a verdict under that section. Verdict accordingly, with leave reserved to the plaintiff to move to enter a verdict for him; the damages to be assessed, if necessary, by Mr. Hall, one of the jury.

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from August 30 *to September* 30, 1854.

Wreck in the Bristol Channel.—A Green Buoy, marked with the word "Wreck," has been placed 20 fathoms north of a vessel sunk below the Flatholms.

The Buoy lies in 6 fathoms at low water spring tides, with the following marks and compass bearings, viz.:—

Penarth Head, just open eastward of Lavernock Point N.N.E.
Brent Knowl, just open westward of Steep Holm Island S.E. by S.
Flatholme Lighthouse E. ½ S., with St. Thomas' Head, just open southward of Lighthouse Point.
Bland's Dwelling House, just open Eastward of Sully Island N.W.

Wreck in the Bristol Channel.—A Green Buoy, marked with the word "Wreck," has been placed about 50 fathoms S.W. of a vessel sunk in 7 fathoms low water spring tides, off the east end of the Nash Sand.

The Buoy lies in the above-named depth of water, with the following marks and compass bearings, viz.:—

Nash Lower Lighthouse	E. by N.
St. Donat's Watch Tower, on with the Castle	E. by S.
The Ruins of Dunraven Castle	N. by E.

Navigation of the River Tees.—The Buoys at the entrance of the River Tees, numbered 1, 2, 3, & 4, which have heretofore been painted White, will, on and after the 22nd September, 1854, be colored Red.

Wreck in the Swin.—A Green Buoy, marked with the word "Wreck," has been placed 15 fathoms to the westward of a vessel sunk in the lower part of the S.W. Reach of the Swin Channel.

This Buoy lies in 6 fathoms at low water spring tides, with the following compass bearings, viz:—

Swin Middle Light Vessel	S.E.
Maplin Lighthouse	S.W. ½ W.
Whitaker Beacon	N. ¼ E.

Cardigan Bay.—The Buoy on the Causeway has been moved, and now lies near the extremity of the Causeway Reef, in 5 fathoms at low water spring tides, with the following marks and compass bearings, viz.:—

Llanbedrog Mill, in line with the East side of West Island at St. Studwall..................	N. by E.
Penkilan Head	N. by W.
Bardsey Lighthouse................................	N.W. ½ W.

Carn Mdryn, on with the West side of Wylfra Head.

Needles Channel and Entrance to Portsmouth.—Peacock's Refuge Buoy Beacons.—The Red S. W. Buoy of the Shingles on the Western side of the Needles Channel, and the Black Buoy on the Southern extremity of the Spit Sand off Southsea Castle, at the entrance to Portsmouth Harbour, have been removed, and their places are now occupied by Peacock's Refuge Buoy Beacons.

These Buoy Beacons, which are constructed of iron, are rendered very conspicuous by their large size, upright position, and conical frame work. The upper part of this frame-work is terminated by a triangular glass reflector, which in the Beacon on the Shingles is 20 feet, and in that of the Spit Sand 14 feet above the water.

There is a refuge deck or platform round these Buoys, with a seat and rail about two feet above the surface of the water.

The S. W. Buoy Beacon of the Shingles lies in 6¾ fathoms water, one mile West of the tail of the Shoal; its marks being the Red Beacon on Hurst Point in one with the High Lighthouse, E.N.E., and the Middle Needle Rock in one with the Needles Lighthouse, S.E. by E. ¼ E.

The Buoy Beacon on the extremity of the Spit Sand is moored in 22 feet water, (but there is no channel between it and the Spit.) From this Beacon the Inner or Eastern Swatchway mark appears half-way between St. Paul's Chapel, and the West end of the large Chalk Pit, bearing N. by E. ¼ E., and the Dock Mill lies in one with Portsdown Semaphore, N. E. ½ E.

Alterations of Buoys on the Dutch Coast.—Two separately visible Beacons have been placed on the outer side of the Banjaard, viz.:—

1st.—An Anchor buoy-shaped Beacon of the largest size, at about four cable lengths outside, or to the N.W. of the steep point of the Banjaard, painted white, with a red top, and bearing one ell above the

same a half-round black painted basket, in the following directions and soundings:—

The Beacon Light on the north side of Schouwen in the centre of the Down of the Wester Doodkist; Veere free of the Downs at the Schans; in the line of the Beacon Light of the Revolving Light of Schouwen E.S.E. rather E.; the Steeple of West Kapelle S.S.W. ½ W. in 10 fathoms, or 17 ells depth at low water.

2nd.—A similar Beacon about half a German mile W.S.W. of the other, likewise painted white, with a red top, and bearing one ell above the same a perfectly round red painted ball, in soundings thus:—

The Light Beacon of the Revolving Light of Schouwen E. by S. rather S. The Steeple of West Kapelle S.S.W. ¼ W. in 8 fathoms, or 13·5 ells depth at low water.

These Buoys are constantly floating, the tops are three, and the baskets fully four ells above the surface of the water, and with ordinary atmosphere are visible fully at a distance of one German mile, when they have the appearance of a small sailing vessel, with a flag at the topmast.

By these objects, in connexion with the Wreck Buoy outside of the Sea Gat of Brouwershaven, which has been exchanged for one of a larger size, together with the Black Anchor-buoy shaped Beacon with basket, lying at the western point of the Ooster, the dangerous points of the Banjaard and of the Ooster are pointed out by four very distinct large Beacons, in regard to which it has to be observed that at which ever of the same observations be taken, by keeping an E.N.E. course, the dangers of the above banks will be avoided.

Coast Light on Schievmonnikoog, Dutch Coast.—The Coast Light on the Island of Schievmonnikoog will be exhibited for the first time on Friday, the 1st of September, 1854, and every night thereafter, from sunset to sunrise.

Further particulars respecting this Light will be published later.

Alteration of the Buoy at the N.E. end of Lyseground, Denmark.—The Buoy on the N.E. end of the Lyseground was on the 8th August changed to a Red iron-pointed Buoy with a Red pole and a Red ball on the top.

Coast of Sweden, Bohus Bay.—Change in the Koster Lights.—The Blue *Revolving Light*, or the Northernmost of the two Lights, on the North Koster Island, has been recently altered, and is now a Fixed Bright Light, but varied by Flashes which succeed each other at intervals of about seven seconds, and which are visible at the distance of three miles.

The tower stands in lat. 58° 54′ 10″ N. and long. 11° 0′ 0″ W. of Greenwich. The above change took place on the 23rd of June last.

Additional Light on Vinga Island, Kattegat.—Coast of Sweden.—On the 1st September, 1854, an additional Fixed Light, varied by

Flashes at short intervals, was exhibited on Vinga Island, in the Kattegat, on the Coast of Sweden.

The new Light Tower is placed in a N.E. ½ N. direction, by compass, distant 400 feet from the old Vinga Light-house; 87 feet above the sea, or at the same level as the present Fixed Light, and is visible all round the compass.

In connexion with the above, the Light on Buskär Island, which lies 2½ miles to the eastward of Vinga, has been altered, so as to appear *Red* to seaward, but continues bright towards Vinga Sound,

Lowestoft Roads.—It having been found necessary to alter the position of the *North Holm Buoy* in consequence of a ridge having recently grown up, the said Buoy has been moved about three cables length in a N. ½ W. direction, and it now lies in 4½ fathoms at low water spring tides, with the following marks and compass bearings, viz.:—

The highest Mill at South Town, Yarmouth, its Length open to the eastward of the South Pier at the Haven's Mouth.........	N. ½ W.
The Low Light at Lowestoft, in line with the Gas House Chimney	S. W. by S.
Stanford Light Vessel	S. by W. ¼ W.
North West Holm Buoy	S. ¼ E.
West Corton Buoy	N.E. by N.

New Beacon to indicate Jœdderen Reef, Norway.—On a small hill called "Blomhong," just inside the reef of "Jœdderen," on the S.W. coast of Norway, a Beacon has been erected, consisting of four wooden spars which unite together on the top; on this is placed a triangle of wood visible from the sea. It is dark coloured. Long. E. from Greenwich 5° 25″; N. lat. 58° 45′; visible from 4 to 6 miles.

North Unst, Shetland, Temporary Lighthouse.—With the view to a permanent Light being ultimately established in this locality, a temporary Lighthouse tower has been erected off the North End of the Island of Unst, in Shetland; the Light will be exhibited therefrom for the first time on the night of Wednesday, 11th October, 1854, and every night thereafter from sunset to sunrise.

The temporary Lighthouse is erected on Muckle Flugga, being one of the group of rocks called the Burra Fiord Holms, which lie off the headland of Hermaness, being the northern extremity of the Island of Unst. Lat. 60° 51′ 20″ N., and long. 0° 53′ 3″ W.

The small rock called the "Out Stack," which is the most northern rock of the Shetland Isles, bears from the Lighthouse about E. b. N. ½ N. by compass, distant about half a nautic mile.

The North Unst Light will be known to mariners as a Fixed Light, of the natural colour. Elevated about 165 feet above the level of high water of ordinary spring tides, and may be seen at the distance of about 19 nautic miles, and at lesser distances according to the state of the atmosphere.

Error respecting the Manilla Light: the Corregidor Island Light.— J. B. Coldbeck, Capt. P. and O. S. N. Co. ship *Tartar*, calls attention to the following error and omission in the new Edition of *Horsburgh's Directory*, wherein the Light at the City of Manilla is called a Revolving Light, and no mention is made of the Revolving Light on the Island of Corregidor. The Light at Manilla is a Fixed Bright Light; and there is a Revolving Light (which does not totally eclipse) on the Corregidor Island at the entrance of the Bay.

NAUTICAL MEMORANDA.

With respect to the *Fixed Light on Plum Point, Entrance of Port Royal, Jamaica,* (vide *Mer. Mar. Mag.*, p. 312,) the following sailing directions have been issued:—

The Red Light brought anything to the Northward of N.W. by W. $\frac{3}{4}$ W. will clear, to the Southward, the low shelving ground of Cow Bay Point, and Lamotte Bank, and the same Light, brought to the Westward of N. $\frac{1}{2}$ E. will clear, to the Eastward, all the shoal ground lying to the Eastward of Maiden and South-East Cays.

Vessels working up from the Southward for the anchorage off Plum Point, or intending to proceed into harbour, must tack immediately on losing the Red Light until within half a mile S. $\frac{1}{2}$ W. of the Point, when the White Light will open, bearing N. $\frac{1}{2}$ E., then steer W. by N. $\frac{1}{2}$ N. until it bears E. $\frac{3}{4}$ S., passing close to the Northward of the White Beacon Buoy off the North Spit of Gun Cay; then alter course to S. W. by W., and as soon as the light opens of the South extreme of Gun Cay, E. $\frac{1}{2}$ S., steer W. by N., which will lead in between the Beacon and West Middle Shoals, (or take the Channel to the Northward of the New Shoal, passing close round Port Royal Point,) and as soon as the Bright Light on Fort Augusta bears N. by E., haul up for it, which will lead clear to the Westward of the harbour knoll, and the South and North Pelican Spits, and as soon as Plum Point Light bears S. E. by E. southerly, haul up E. $\frac{3}{4}$ S. for the anchorage of Kingston, when a Red Light will be seen on Fort Augusta astern, bearing W. $\frac{1}{2}$ N. from the Anchorage off Kingston.

The White Light will show the vicinage of all the Cays and Shoals lying to the Southward and Westward of Plum Point, as well as the North-Eastern limits of the Shoal extending to the Eastward of the North Pelican Spit, Westward of Kingston Harbour.

Ships coming from the Westward, and having brought Portland Point to bear about N., should steer E.N.E., so as to make the White Light upon N.E. by N. bearing, continue the same conrse until the Red Light opens, bearing N. $\frac{1}{2}$ E., then haul up for it, and proceed as before directed.

The Bright Light will be exhibited from a single Lamp, suspended to the Beacon on Fort Augusta, 40 feet high, and will only be seen when to the Southward and Westward of it. It may be

used as a guide through the South Channel, by keeping it upon a N. by E. bearing, which will lead clear to the Westward of the Portuguese Buoy and to the Eastward of the Three Fathoms Bank; but the use of this Channel is not advisable at night, except by drogers and other small vessels.

The following are the Bearings and Distances from Plum Point Lighthouse:—

Cow Bay Point	E.S.E.	8 miles.
Lamotte Bank	E.S.E.	$13\frac{1}{8}$ „
Morant Cay	S.E. by E. ...	56 „
East Middle Buoy	S.S.W. $\frac{1}{4}$ W. ...	$1\frac{1}{8}$ „
South East Cay	S.W. $\frac{1}{2}$ S. ...	$2\frac{1}{3}$ „
Portuguese Buoy	W.S.W.	$5\frac{1}{2}$ „
Portland Rock	S.W.	61 „

N.B.—The whole of the Bearings are Magnetic, and it is recommended that they be strictly attended to.

Black Rock, (probably a new discovery,) *North Pacific.*—Capt. Abram Somerby, of the American barque *Isabelita Hyne*, in a letter to Lloyd's agents, dated July, 1853, mentions a rock which does not appear to be laid down on any of the three North Pacific Charts which he possessed:—"It lies in lat. 29° 42′ N., long. 140° 15′ E., and is about 200 feet high, and 100 feet base. I ran within three miles of the rock—no bottom. It looks black, and having the appearance of a bottle; I had good observations both for chronometer and latitude, and my chronometer I found to be correct on my arrival at Port Philip, New South Wales. I name it Black Rock. This rock I consider very dangerous if a vessel should strike it in a dark night, as there is but little chance of getting on the rock, and if gained there is not a vestige of anything of vegetation on it; and no chance of getting off, as no one would ever think of a man being there if it should be seen. The nearest island to it lies North 52 miles, called Ponofidon, or St. Peter's, by J. S. Hobb's Chart of 1850 and additions to 1851."

Soundings off Cape Corrientes, South Atlantic.—Commander Henry Boys gives the following information on this subject (dated March, 1854):—

At midnight on February the 6th, when by D. R. corrected by observation the following day, in lat. 39° 41′ S., long. 56° 25′ W., I gave orders to sound to ascertain our position with regard to the bank of soundings off Cape Corrientes.

The ship was standing to the westward, going two knots, the wind 7, S.S.W. By our reckoning we should have been in 50 fathoms, but we obtained bottom in 24, 38, and 50 fathoms. This was so unaccountable that I wore round to the S.E., when our soundings were first at 40 fathoms, then at 50 fathoms, which continued regular; the shallow soundings were hard rock bottom, with 50 fathoms fine sand. Massey's Patent Sounding Machine agreed with the up and down soundings felt by hand. It was a dark night and a heavy sea running, or I should have examined the shoal more particularly.

I do not imagine there to be any danger, but as vessels frequently correct their longitude by the soundings where this shoal patch was found, and no mention being made of it in either directions or charts, they might be led into great error, I therefore consider it my duty to report the same.

Report respecting a Shoal in the North Atlantic.—Capt. James Thomas, of the brig *Prince*, of Scilly, on the voyage from London to Algoa Bay, gives the following extract from his Log:—December 11th, 1853, at 3h. 30m. P.M. clear weather and very smooth water, all sail set, ship going four knots through the water; suddenly felt a grinding tremour go through the vessel, as if dragging over something rough and yielding. It continued for about a ship's length; did not stop her way through the water. Hove a cast of the hand lead about five minutes after, no bottom, and no appearance of a shoal discernible, or any floating substance. The ship did not strike, only dragged over it, much the same as a light drag over sand or coral; the tremour alarmed all on board; was felt by all below and on deck.

Lat. by sun's mer. alt. reduced from noon 0° 54′ N.
Long. chron. per morning and evening sights 26° 5′ W.

Since the arrival of the *Prince* in London, the bottom of the vessel has been examined, and there is a clear proof of having passed over something rough, as the copper is very much grazed on the lee bilge.

Sunderland Docks.—Notice to all Masters of Vessels, Pilots, and others entering the Port of Sunderland.—The Commissioners of the river Wear have made the following bye-law:—

That no vessel shall be allowed to bring up opposite to the entrance of the Sunderland Docks, or to enter the dock basin of the said docks, if ordered by the Haven Master to proceed up the river; and if any Master Pilot, or other person in command of any vessel, shall disobey such order of the Haven Master he shall forfeit and pay for every such offence any sum not exceeding £5.

And for the purpose of regulating vessels entering the port, and to prevent accidents from too many ships bringing up in the lower part of the harbour, the following signals will be exhibited whenever the Haven Master considers it necessary for ships to go immediately above the entrance of the Sunderland Docks. By day, two Red Balls, one under the other, will be exhibited from a flagstaff on the top of the bank above the dock entrance.

By night, two Green Lights will be exhibited in a similar manner at the same place.

N.B.—The above regulations and bye-law are required to be strictly observed, and will be enforced on and after the 1st day of October, 1854.

NAUTICAL NOTES.

Guano Island. — Commander de Horsey, of Her Majesty's ship *Devastation*, (August 1, 1854,) reports that he found three vessels, under American colours, at the uninhabited island of Aves, in lat. 15° 40′ 40″ N., and long. 63° 36′ W., and one day's sail from St. Croix, shipping guano, of which he states there is about 200,000 tons on the island, and but slightly inferior to the Peruvian.

A Ship's Crew and their Management; necessity for a Boatswain.— "There are times when it is necessary to be severe, but, on the other hand, many a good crew have been rendered mutinous by swaggering and bullying mates, who in general are very apt to go into extremes, either submitting altogether to sneers and disrespect, or becoming the bully or tyrant. The mate having passed over his first years of office, in which he is apt to fall into the former line of conduct, he is determined, when he gets a fresh crew, to begin in earnest to keep them in subjection, and then becomes the tyrant. There are few who can hit upon a middle course, and the same advice will not do for all; it would be useless to recommend mildness and quietness to those already too much so, or energy and firmness to the hot-headed or stubborn. Different seamen also require different treatment; the intelligent well-disposed man will give very little trouble, as he generally goes about his work systematically, gets through with it quietly, and will, if not spoiled by familiarity, go the whole voyage without giving dissatisfaction. If such a man, when he gets a wetting, occasionally 'damns the bloody hooker,' or when interrupted in his yarn or smoke by a call to the braces, appears annoyed, no attention should be paid to him, for he himself well knows that the former he must take with his profession, and the latter is an indispensable duty, and he is only grumbling at the wind, so no notice of it is necessary; but no duty or discipline should be relaxed that might make it appear that he gains anything by his grumbling. With the regular insolent 'growl' the case is different; he cannot be too soon curbed or too closely watched; he, if allowed 'headway,' will very soon destroy the harmony of the ship's company, which, if once broken up, remains so for the rest of the voyage. * * * * * * *

"A man of education, common sense, and coolness, may do what he pleases with most seamen. A few calm remarks on their faults, calling to their recollection the agreement they have signed, reminding them of the necessity of organization and discipline even amongst banditti, pointing out to them how much better they are under the authority recognized by law, and voluntarily acknowledged by themselves, than they would be under those who constitute themselves ringleaders in disturbance, would have a powerful effect on most crews; but the language they have from their superiors is the same as that of the forecastle, and often, very often, inferior. The man in authority must look more to himself than to the legislature for the maintenance of order and discipline. Gentlemanly behaviour will get the respect of the crew, and, consequently, strengthen his authority

over them. One who is above an interchange of Billingsgate will hardly ever receive a provocation to use it. When there has been kindness shown to a sailor, and he is afterwards ungrateful, it is folly to remind him of favours, for it only makes him worse; and, conscious of his own ingratitude, he will become quite reckless, and totally regardless of again meriting favour or esteem. But this ingratitude is often the result of a very common system of heaping favours with the hand and insults with the tongue; and favours can scarcely be considered as such if the receiver is afterwards reminded of them. * *

"It seems very strange that as ships are made larger, and with an increase of foreigners in the Merchant Service who understand but very imperfectly the orders given, that the boatswains' call should be so much disused; formerly the crews of the ships of four hundred tons did everything to the sound of the call, and now, in vessels of five times that size, where the voice requires to be strained in order to be heard, the call seems to have been forgotten. Much confusion might be prevented by the use of this little instrument, particularly where the crew do not all speak the same language. Its different sounds can be heard and understood when the voice cannot, and even its use of calling attention should not be overlooked.

"When men are not expecting an order, the words may not be distinctly heard by all, and consequently they have to ask each other such questions as 'What's that,' 'What is it,' 'Did you hear it,' &c., and not unfrequently wait till the order is repeated. The shrill sound on the call denoting 'attention' obviates all this, and causes the order that follows it to be distinctly heard by everybody."—*The Mate and his Duties.*

NEW BOOK.

Text Book for the use of Officers preparing to pass Examination at any of the Local Marine Boards; by W. H. Prior, &c., &c. J. D. Potter, 31, Poultry.

THERE are several works of a similar description already in the field, and the book whose extensive title-page we have been compelled to curtail to the above dimensions is by no means an improvement on its predecessors; in fact, it may be said to be a compilation from them all—to the extent of a literal copy in parts where such ought not to have been the case. From the appendages to the Author's name we were led to expect something far above what has been hitherto issued to the same end, and we must again caution readers against what is recommended in the *Text Book*, viz.—following the directions of the work, called the "True Principles (?) of the Law of Storms."

TO CORRESPONDENTS.—*It is particularly requested that all Communications be sent to the Editor as early in the month as possible.*

All Communications to be addressed "EDITOR OF THE MERCANTILE MARINE MAGAZINE, *care of Mr. W. Foster, 114, Fenchurch Street, London.*" *N.B.—The real Name and Address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

NOVEMBER, 1854.

ON THE VARIATION IN THE RATES OF CHRONOMETERS.

At the meeting of the British Association in Liverpool, in 1837, a memorial from that body, on the subject of a Nautical Observatory, was read before the Town Council, and referred to a special committee. It is stated in the memorial "that among the various objects of interesting inquiry which have been brought before the British Association at their visit to this large and enterprising commercial town is the condition of Nautical Astronomy in the merchant service, a science the application of which is decidedly the most important to mankind. The loss of life and property which is annually caused by a defective knowledge of this science would astonish, were it publicly known." After urging the importance of erecting a Nautical Observatory, the objects of such an establishment in a port like this are said to be the "accurate knowledge of Liverpool time, and the care of Chronometers while in port, so that a captain when he sails may receive his Chronometer sure both of its error and rate, which at present he cannot do. In this the committee have no intention of disparaging the chronometer-makers of Liverpool, for it is stated that even in London the times obtained from celebrated makers have differed two minutes, and these two minutes might have caused a wreck." I have quoted the above extracts in order to show that hopes were entertained of an improvement being effected in Navigation by having recourse to more accurate means of rating and testing the quality of chronometers employed in the merchant service. In accordance with the wishes expressed in the memorial the Corporation established a first-rate Nautical Observatory. This Observatory has now been in operation, so far as regards the rating and testing of chronometers, for nearly ten years; and the very active part taken by the British Association in the recommendation of its establishment at its first visit to this town leads me to hope that an equal degree of interest will be taken at this, its second visit, in the results of our labours. As regards the purely scientific department, the observations have, for the most part, been printed, and the libe-

rality of the Corporation, in supplying the Observatory with the magnificent instruments with which these observations were made, will, I doubt not, be highly appreciated by the distinguished visitors now in this town. There is, however, one department of the Observatory to which public attention has not been directed so fully as, I think, its importance deserves. I allude to the rating and testing of chronometers; this being, moreover, the main object for which the Observatory was established. In the memorial from which I have quoted it is stated that a captain could not at that time obtain the correct error and rate of his chronometer in consequence of the time not being accurately known. Since the establishment of the Observatory this deficiency has been removed; the arrangements for obtaining and carrying on the time are so complete that no sensible error can possibly arise in that way. Having accomplished this object, our attention has been directed to further improvements, and the exquisite arrangements which we possess for testing time-keepers have led us to the discovery of a source of error to which chronometers employed in the merchant service are subject, the importance of attending to which I will endeavour to explain. To enable the mariner to find his longitude at sea by the chronometer, he is furnished with its daily gain or loss, which is called its *rate*. The practice, almost universally adopted, has been to take for granted that this rate is uniform during the voyage. Chronometers are supposed to be compensated for the changes of temperature to which they must necessarily be exposed at sea in different latitudes, and captains are instructed to use the same rate in all climates. Now, we are prepared to show that, for chronometers employed in the merchant service, the average change of rate caused by changing the temperature from 40° to 60° of Fahrenheit is *seven seconds* a day. Hence, if we ascertain the rate of a chronometer on shore with the most scrupulous degree of accuracy in a temperature of 40°, and this chronometer be afterwards taken to sea and exposed to a temperature of 60° for the short period of eighteen days, the accumulated error on Greenwich time, according to the above-named average, will be upwards of two minutes; and an error of two minutes, it is stated in the memorial before referred to, might cause a wreck. This variation of rate, from *change of temperature*, differs so much in different time-keepers, that, without a trial, no idea can be formed of its amount in any particular chronometer. In order to show this more clearly, we have compiled, from the records of the Observatory, three Tables; each Table shows the change of rate for each of one hundred chronometers, caused by changing the temperature to the extent named in the respective headings. Notwithstanding the great change of rate (shown by the Tables to have been produced by change of temperature) we find that in nineteen cases out of twenty the original rates return the instant that the original temperature is restored. On an average of about one chronometer in twenty it is found that the rate changes in the most capricious manner with almost every change of temperature; and an examination of our records will show that the sea-rates of such chronometers are equally uncertain; no dependence whatever can be placed in them. Such imperfect time-keepers have necessarily been

rejected in forming the tables, but in other respects the chronometers were taken in succession as they were presented at the Observatory. They are arranged in the order of change of rate, beginning with the chronometer which gained the most, and ending with that which lost the most. In Table I., (*vide* p. 405,) the average change in the daily rate caused by changing the temperature from 40° to 60° is 6.97s.; taking the two extremes, one chronometer in the hundred gained 15.3s., and one lost 72.2s. a-day, by changing the temperature only 20°; the average change of rate of the first ten in the hundred is 7.1s. gaining; the average of the second ten is 0.3s. losing; and the average of the last ten in the hundred is 29.8s. losing. There are fifteen chronometers in which the loss is more than 4s. and less than 5s. a-day, and there are six in which the loss is more than 8s. and less than 9s. a-day; so that it is quite possible for a captain to have two or three chronometers, all of which might place the ship in nearly the same longitude; and this longitude might, notwithstanding, by the accumulated errors of the chronometers in two or three weeks, be wrong to an amount sufficient to place the ship in danger. Tables II. and III. (pp. 405 and 406,) show the change of rate caused by changing the temperature from 60° to 80° and from 50° to 80° respectively; the variations, it will be seen, were much greater in the low than in the high temperatures; it appears, as before stated, that about 5 per cent. of the chronometers which have passed through the Observatory are altogether unfit for nautical purposes. With the means which we possess for testing, there is no difficulty in detecting such chronometers in a trial of two or three weeks. With regard to the remaining 95 per cent., it appears that very great dependence may be placed in them if we take into consideration the change of rate due to change of temperature. Unfortunately, we have no record of the temperature to which the chronometers that have passed through the Observatory have been exposed during the voyage; but we find that the average of the sea-rates of chronometers employed in the North American trade agrees with the rates of the same chronometers on shore in a temperature of about 60°, and that the average of the sea-rates of chronometers which have been exposed to a tropical climate during great part of the voyage agrees with the rates of the same chronometers on shore in a temperature of about 80°. The regularity with which we find this to take place is such as to leave no doubt as to the advantage which an intelligent navigator would derive by correcting the rate of an imperfectly-compensated chronometer for change of temperature when the voyage is long and the climate changeable. Captains, however, have never been instructed to do this; such a method of proceeding forms no part of their education; and even in the examination which all are now compelled to undergo before they take the command of a ship, their attention is not even drawn to the possibility of the rates of chronometers being affected by change of temperature. The rates, as before stated, are assumed to be uniform in all climates. The different owners of the 300 chronometers, the variable rates of which are shown in the Tables, were made acquainted with this imperfection for the first time when they sent their chronometers to the Liverpool Ob-

servatory. I am not aware of the existence of any other establishment in the world in which captains of merchant ships can obtain any information relative to the variation of the rates of their chronometers in different temperatures. Attention appears to have been exclusively directed to accurate astronomical means of determining the rate. Now, our records show that the average variation of rate caused by changing the temperature so small a quantity as one degree of Fahrenheit is very much greater than the probable error in the rate arising from any imperfection in our astronomical means of determining it. If we assume the rate to be affected by no other cause, the variation arising from a change of temperature is so great, that unless we take it into account, the agreement between the land and sea rate must be the result of mere accidental coincidence, and practically this is found to be the case. Professional raters make themselves acquainted with the sea-rates of the various chronometers which pass through their hands, and then adapt the shore rates to them. The cause of this variation between the shore and sea rate is generally supposed not to be known. The duty of finding out the amount of variation by collecting and discussing the sea and shore rates is confided to the professional rater, and captains are kept in ignorance of its existence, so that a change of temperature may at any time be the cause of the chronometer deceiving both the rater and the captain. That serious disasters do occasionally occur from this cause there cannot be a doubt; and it is quite certain that they might be avoided, either by captains being made acquainted with the variation of rate peculiar to each of their chronometers, or by makers removing the fault by effecting a more perfect compensation. With respect to the former method, our records show that in an observatory provided with the necessary apparatus it is quite practicable to ascertain the variation of rate due to change of temperature, and to supply captains with the means of making the correction. With regard to the latter, the attention of chronometer-makers has been directed to the subject for many years; numerous methods have been patented, professing to effect a more perfect compensation, and we find by the published rates of the chronometers which are now sent to Greenwich annually for trial, that three-fourths of them are said to have some improvement intended to remove this serious defect. Now, what is the effect of all this upon chronometers employed in the merchant service? We need only to appeal to the results shown by the following Tables for an answer; they show how excessively those chronometers lose at the two extremes of temperature; and instead of three-fourths, as at Greenwich, having some improvement, we find the ordinary imperfect method of effecting the compensation almost universally had recourse to. The practice adopted by makers of applying their improvements to chronometers intended for the Navy, and not applying them to those intended for the Merchant Service, has doubtless arisen from the knowledge that in the former they would be tested at the Greenwich Observatory, previous to their being purchased, while in the latter, captains and those about to purchase chronometers have, till lately, had no means of testing them, or making themselves acquainted with the advantages of any improve-

ment in the compensation: and now that this great boon is offered them in Liverpool, through the liberality of the Corporation, the advantage to be derived from it is so little understood, that but comparatively few avail themselves of it. If some method could be devised of disseminating knowledge on this subject amongst captains, shipowners, and underwriters—all of whom are deeply interested in a quick and secure passage—surely some means would be taken for testing all chronometers in those temperatures to which ships are liable to be exposed at sea, previous to their being placed in the hands of Captains. By so doing Navigation would be greatly facilitated and rendered much more secure; and the best method of accomplishing this object is, I think, a subject well worthy of the consideration of the British Association; for it will be found that we are in possession of most undoubted evidence that the rates of chronometers now employed in the merchant service are so much affected by change of temperature as to render them very unsafe, and even dangerous instruments in the hands of captains who are unacquainted with the facts which I have so imperfectly developed in this brief notice. We therefore entertain the hope that more efficient and systematic efforts will speedily be made to diffuse the requisite information amongst all those who are personally or otherwise interested in these important matters.

TABLE I.

Showing the Change in the Daily Rate of each of 100 Chronometers, caused by changing the temperature from 60° to 40°.

Increase of gaining rate in seconds of time.

+ 15.3	— 1.9	— 3.7	— 6.2
13.1	2.0	3.8	6.3
8.1	2.2	4.0	6.5
7.9	2.3	4.1	6.8
7.8	2.3	4.2	7.0
5.4	2.3	4.3	7.3
4.4	2.4	4.3	8.1
3.8	2.4	4.3	8.2
3.2	2.9	4.5	8.5
1.9	2.9	4.5	8.6
1.0	2.9	4.5	8.7
0.6	3.0	4.6	8.8
0.3	3.0	4.6	9.0
+ 0.1	3.1	4.8	9.0
— 0.8	3.1	4.8	9.1
1.0	3.1	4.9	9.6
1.1	3.2	4.9	10.8
1.2	3.2	5.0	11.1
1.4	3.3	5.1	12.0
1.5	3.3	5.3	21.5
1.6	3.3	5.3	22.7
1.7	3.4	5.8	28.1
1.9	3.5	6.0	45.2
1.9	3.7	6.1	65.1
— 1.9	— 3.7	— 6.1	— 72.2

Average change of daily rate = 6.97 sec.

TABLE II.

Showing the Change in the Daily Rate of each of 100 Chronometers, caused by changing the temperature from 60° to 80°.

Increase of gaining rate in seconds of time.

+ 13.1	— 1.2	— 1.9	— 3.0
7.1	1.2	2.1	3.0
6.2	1.2	2.1	3.0
5.5	1.3	2.1	3.2
4.8	1.3	2.1	3.3
4.1	1.3	2.2	3.3
3.8	1.3	2.2	3.3
3.8	1.4	2.3	3.5
3.5	1.5	2.3	3.6
3.4	1.5	2.3	3.6
3.1	1.6	2.3	3.7
3.1	1.6	2.3	3.7
2.6	1.6	2.4	3.7
2.4	1.6	2.5	3.8
2.0	1.6	2.6	3.8
1.9	1.7	2.6	3.9
1.5	1.7	2.6	4.0
1.3	1.8	2.6	4.1
1.3	1.8	2.7	4.1
+ 1.1	1.8	2.7	4.2
— 0.6	1.9	2.8	4.6
0.7	1.9	2.8	4.7
0.8	1.9	2.9	5.3
1.0	1.9	2.9	5.5
— 1.1	— 1.9	— 3.0	— 12.0

Average change of daily rate = 2.85 sec.

TABLE III.

Showing the Change in the Daily Rate of each of 100 Chronometers, caused by changing the temperature from 50° to 80°.

Increase of gaining rate in seconds of time.

+ 14.2	+ 3.3	+ 2.3	+ 1.5	+ 0.1	— 0.8	— 2.0	— 2.9
9.7	3.3	2.2	1.5	— 0.0	1.0	2.1	3.0
7.9	3.2	2.1	1.2	0.1	1.3	2.1	3.1
5.8	3.0	2.0	1.0	0.2	1.4	2.1	3.3
5.3	3.0	2.0	0.8	0.3	1.5	2.1	3.5
5.1	2.9	2.0	0.8	0.4	1.6	2.3	3.6
4.3	2.7	1.9	0.7	0.4	1.7	2.6	3.6
4.0	2.6	1.9	0.5	0.5	1.9	2.7	3.8
3.8	2.5	1.8	0.5	0.6	2.0	2.7	4.3
3.5	2.4	1.6	0.5	0.6	2.0	2.8	4.7
3.5	2.4	1.6	0.4	0.7	2.0	2.8	5.5
3.4	2.4	1.5	0.3	— 0.8	— 2.0	— 2.8	— 8.5
+ 3.3	+ 2.4	+ 1.5	+ 0.2				

Average change of daily rate = 2.49 seconds.

J. HARTNUP,
Liverpool Observatory.

REMARKS AND DIRECTIONS FOR BAHIA, OR ST. SALVADOR, COAST OF BRAZIL.

BY CAPTAIN E. G. DENT, BARQUE CAMBRIAN.

THE Tower of Bahia stands on the eastern side of the Bay of All Saints, which is twenty-six miles in extent from north to south, and nineteen from east to west. There are two entrances to the Bay—by both sides of the island Itapurica; the western, or false entrance, is only fit for coasting vessels; the eastern one is about five miles wide, leaving Cape St. Antonio on the eastern side, and Point Conception, (island of Itapurica,) on the western.

The usual track out to Bahia is to cross the equator between 27° and 30° W., according to the season—some of the quickest passages having been made within those limits. Many of the regular traders make it a general rule, even in the time of the Souths (between March and September) to cross in not less than 28° W. Ordinary sailing vessels following the above track have beaten much faster ships that have kept more to the eastward and which left England at the same time.

Bound to Bahia in the southern monsoon, it is preferable to steer for the Morro of San Paulo, to the southward of Bahia, between which and the high land of Itapurica the coast is low and sandy. In the northerly monsoon it is advisable to make the land a little to the northward of Point Itapuan, which is easily distinguished; the land a few miles to the northward of it having a whitish appearance among the trees, similar to a fall of snow, to the southward of which the land

tapers in an unbroken point to the water's edge, and being thickly covered with trees; it has the appearance of a black wedge. The Point is eleven miles E.N.E. of Cape St. Antonio, the entrance to Bahia, on which is a Revolving Light.

About S. ½ E., 4½ miles from Cape St. Antonio, is the southern extreme of St. Antonio Bank, composed of sand and coral; the least depth on it at low water is 13 feet; between the bank and the shore is a channel three quarters of a mile wide. In the Admiralty Charts of the harbour the depths marked in this channel vary from twelve to six fathoms. An alteration must have taken place since the survey, as, in going through the centre of the channel with a light leading wind and the lead constantly going, I never obtained more than six fathoms, mostly half-five. A stranger going into Bahia should give the Light-house a berth of five miles until it bears N. by E., and then haul up for the anchorage which he will generally be enabled to fetch in one board.

Upon first arrival vessels generally anchor about a mile S.W. of Fort do Mar, till visited by the proper officers, when seals are placed upon the hatches, and a berth in the discharging ground is then pointed out for the vessel to remove into.

Captains proceeding to Bahia, or any of the Brazilian ports, must be careful to obtain, in addition to the usual manifest of cargo, an attested one by the Brazilian consul at the port of loading, otherwise a heavy fine is inflicted. A vessel in ballast must produce a manifest in accordance with the above regulation, and if there is not a Brazilian consul, it must be signed and attested by two resident merchants at the port from whence she has arrived.

The discharging ground is between two imaginary lines running W. by S. from the Fort do Mar and the Consulado, and extending about a mile off shore. The loading ground is to the northward of the above. The space between Fort do Mar and the guard-ship which is anchored S.W. of the Fort is called Franquia, in which vessels must remain twenty-four hours before their final departure, previous to which both vessel and papers are examined by an officer from the guard-ship, the signal for whom is the national colors at the main. The national colors at the main, while laying in the loading or discharging grounds, is a signal for the sick boat, which is constantly rowing round the shipping, during the day, for the conveyance of the sick to Montserrat Hospital. After the examination of ship and papers by the proper officers, no further communication with the shore is allowed, and if the vessel does not leave before sunset, a second examination is taken before she is allowed to proceed. Upon clearing out, care must be taken to have every thing on board before leaving the loading ground for Franquia, nothing being allowed to be taken on board afterwards. Captains taking off even a few fowls, in their own boat, subject themselves to a fine, and their boat to confiscation.

There are two ship-chandlers who supply shipping with the usual requisites—D. Easton (English), and W. C. Rogers (American). With the exception of fresh meat, vegetables, and fruit, the charges for every thing are very high, particularly for naval stores. Lighters

constructed for the purpose, with every necessary for heaving ships down for repairs, are moored in-shore of the loading ground. An American clipper ship, (Queen of Clippers,) 2,400 tons, from Callao, was hove down and caulked there in April last.

The Custom-house hours for discharging coals are from 7 A. M. to 3 P. M.; for general cargoes from 7 to 11 A. M. only, as the goods are examined at the Custom-house the day they are landed. An officer is sent on board during the discharge, who unseals the hatches, tallies the cargo, and seals the hatches up again when leaving. The persons so employed are changed every day. Persons from the shore are not allowed on board of ships in harbour, either on business or pleasure, without a permit from the Custom-house; neither is visiting allowed between crews of vessels.

Crank ships that will not stand without ballast are occasionally allowed to take in part of the homeward cargo, to stiffen them, before the outward cargo is discharged—but it depends entirely upon the whim or caprice of the principal at the Custom-house. Generally the lower yards and topmasts have to be struck, and the vessel afterwards ballasted, if necessary, before they allow the homeward cargo to be taken on board.

In Bahia charter-parties the question of lighterage is evaded, (a serious item in a ship's account, as it generally averages from 4½ to 5 per cent. upon the gross freight); consignees charge it, pleading custom for so doing. Captains submit to it to prevent detention, and hasten their departure from a sickly port. But from the wording of their printed charter-parties, which are all alike, I very much doubt their being compelled to pay it, if taken into a court of law. Formerly a charge was made upon shipping for breaking out and marking their cargoes, but the custom is now abolished.

The cargo is considered to be in charge of the commander of the vessel for which it is destined, upon leaving the wharf in the lighters, and should any of it be lost between the ship and the shore it is charged to the ship's account. The charge for stowing, (stevedores finding and paying their own men,) is as follows:—

	reis.		*reis.*
Sugar in cases	180 per case	Rosewood	970 per dozen.
Sugar in bags	20 per bag	Hides......	18 each.
Coffee or Cocoa in do.	20 per bag	Piassava...	8 per double bundle.

The ordinary expenses of a vessel discharging and loading a cargo, in the port, commissions included, would not be less than a £1 per register ton. The currency is in reis and milreis, the average exchange being 2*s.* 3½*d.* per milrei.

Preserved fruits and feather flowers, in great perfection, can be purchased at the convents, at reasonable prices. A small, but very neat Protestant church has lately been erected in Campo Grande, where a great number of the resident British subjects reside. About midway between the Custom-house and Consulado, and near the water side, is the site of the new market, which is well supplied with poultry, fish, fruit, vegetables, &c.

Long detentions often occur for want of seamen; should Brazilians have to be engaged the wages paid must be very high, and guarantee given for the payment of their passage back. In the event of the death of captain and mate, the charge for a Brazilian or Portuguese to navigate the vessel home is generally very heavy—as much as £120 having been paid for the purpose.

The climate of Bahia was generally healthy till 1849, when the yellow fever was first brought there by the American brig *Brasil*, from New Orleans, since which time its ravages have been fearful. The months of April, May, June, July, and August, is the time of its greatest violence, particularly amongst the shipping, where the attacks generally take place between the hours of 7 and 11 in the morning; I never knew a case occur after that time of the day. During my stay there very few persons belonging to ships in the harbour who escaped. The average loss of crew was seven each ship; some of the vessels left with but one man of the original crew remaining. Of my own crew not one escaped, seven of them being attacked one morning within twenty minutes, four of whom died in hospital shortly after their admission. I attribute my own recovery from a severe attack, during which I was delirious, from having leeches applied to the head. It has met with success in many cases. It is worthy of remark, that the fever was more violent and fatal on board vessels where the crews were allowed to bathe alongside after working hours. The first indication of an attack is an exceedingly hot forehead, which feels numbed on pressure; next violent pains in the head and loins; castor oil should then be taken at once, and medical advice sought immediately. The fever generally takes a turn for recovery on the third day, or else turns to black vomit, which is mostly fatal. There are two medical men who attend to the shipping—Drs. Pattison and Fairbank; the former is generally considered to have been the most successful in his treatment of yellow fever. The hospital for seamen is at Montserrat, from whence an account is sent twice a week of the number of persons who have been admitted, recovered, or buried, which is published in one of the local newspapers. At Montserrat a trench is dug every morning for the reception of those who die during the day, into which they are placed by the black slaves who attend the establishment, without either coffins or burial service. Persons dying on board are buried at the cemetery near the Man of War ground, where there is a clergyman in attendance. No one but an eye-witness could form an idea of the scenes of misery on board the ships during the rainy season—the dread of infection being so great that sufferers meet with but little attention or sympathy. Those who have the black vomit are often left to chance, with a jug of water within reach; the screams from sufferers are fearful.

As a port of call for outward-bound Australian ships in want of water Bahia is to be recommended, being an easy matter to get in or out without pilots. Supplies can be quickly and readily obtained, and for the short time the vessel would lay in the outer roads, there would not be much likelihood of catching the fever; nor need any fear be entertained about getting to the southward afterwards, as, even in the time of the Souths, the wind is rarely to the southward of E.S.E.

DEVIATION OF COMPASSES ON BOARD IRON SHIPS.

THE different papers on this subject, read at the late meeting of the British Association for the Advancement of Science, having been productive of considerable discussion among the merchants and shipowners of Liverpool, Dr. Scoresby attended at the Underwriters' Rooms for the purpose of explaining more fully his own views of the important questions which so nearly affected all who are engaged in the shipping interest.

Dr. Scoresby said he appeared, in consequence of an invitation from the Underwriters' Association, in order to give some further explanation of his views on the magnetic condition of iron ships, as producing, or likely to produce, compass-disturbances, and to suggest available remedies. He accepted the invitation with much satisfaction, both on account of the importance of the subject, and because of certain misapprehensions which had arisen with respect to some of the statements he made at the recent meeting of the British Association. If any anxiety should have arisen in the public mind, by moving in this question, he trusted that it would be of beneficial effect; for he was persuaded that gentlemen in Liverpool, interested as they deeply were in the management and success of iron ships, would not allow the matter to rest. Colonel Sabine, in a discourse before the British Association, showed that even the magnetism of this very globe was not free from disturbance; then, how much more likely was the magnetism of iron ships to be disturbed by magnetic causes? In the outset he would endeavour to clear the subject of erroneous impressions which had been attached to it; and, first, he wished it to be most distinctly understood, that any observations he had made or should make, were not designed to draw invidious comparisons between the relative efficiency or inefficiency of iron and wooden ships, but were merely intended to draw attention to that disturbing element belonging to iron ships which, if not ascertained and understood, might produce embarrassment and danger, but which, he believed, with due care and caution on the part of the navigator, and by the appliances of science, might ultimately be, for all practical purposes, completely obliterated. Nor did he wish to be misunderstood as implying that deviation did not occur in wooden ships as well as in iron ships. On the contrary, so long ago as the year 1815 he directed his attention to the deviation in ships built of timber; and in 1819 he published, in the *Transactions of the Royal Society*, his views on the causes of deviation of compasses in the ships of that day. It will also be in the recollection of several gentlemen now present, that, on the 23rd January, 1822, he gave a lecture at the Royal Institution, Liverpool, on the same subject, on which occasion he shewed the danger arising, not so much from the fact of that deviation, but from ignorance and inattention to that important fact. He showed in that lecture that, in the winter of 1810-11, three or four ships of the royal navy were wrecked on the coasts of Holland and Jutland, and that the disasters were to be ascribed to the deviation of the compasses— as to which, whilst the merchant seamen, experienced in that parti-

cular navigation, were aware of some disturbing cause by which ships were thrown out of their course, it was clear that the officers commanding these ships had little or no knowledge of the fact. On the occasion of the wreck of the ships of the navy to which he had alluded, a man named White, of little or no education, but possessing remarkable intelligence, had observed this tendency to draw his ship towards the port-hand when descending from the Baltic towards the English Channel. The commander of the Hero, one of the unfortunate ships wrecked on that occasion, signalled to steer S.S.W.; but White, who was pilot of a transport, warned by experience, and by the acuteness of his intelligence, directed that his ship should be steered W.S.W., observing, that "if the men-of-war kept in the same course they were pursuing, they would sleep in their shoes before morning." His prophecy proved correct, for, while he safely entered the Downs, the ships of the royal navy were stranded that night; and it is lamentable to recall the facts of catastrophes where about 2,000 men were lost, in consequence of neglecting, or being unwarned of, the deviation of the ships' compasses. It was absurd, therefore, to assume that, if the comparatively small quantity of magnetic material in wooden ships would produce disturbance such as, being unattended to, might be so disastrous, that ships built entirely of iron would not be liable to the same effect. Consequently the practical result of these facts, corroborative of his (Dr. Scoresby's) investigations, came to this —not that ships of iron were not capable of compass guidance, but that the compasses, being liable to certain changes and alterations, derived from the changes in the magnetic condition of the ships, became dangerous if not understood. If this were understood by the intelligent captains of our ships, the danger, if not utterly abolished, would at all events be vastly decreased. Hence the real question resolved itself into these two propositions—First, whether the compasses in our ships were liable, under certain circumstances, to sudden disturbance, which, if unknown and disregarded, might be dangerous? And, secondly, what might be done to diminish the liability of this disturbance of the compasses, or when it did occur to render it less dangerous, so as to render the navigation of ships, liable to this disturbance, more safe? In considering these inquiries, he proposed to show the principles by which magnetism in iron ships was developed— the changes to which that magnetism was liable—and to suggest the measures which might be available for diminishing these evil effects, and so improving the advantages derivable from compass guidance. Dr. Scoresby then proceeded to make a series of interesting experiments to prove that iron, though highly susceptible of magnetism, was not in its nature spontaneously magnetic in any degree, but that there were circumstances under which, by inductive influence, a high degree of magnetic intensity was developed. It was a matter well known, not only that iron became magnetic by virtue of the inductive influence of the earth, but that, as he had discovered as long ago as the year 1825, the magnetism might be controlled, altered or destroyed by mechanical action. An iron bar, entirely neutral as to its molecular magnetism, as shown by its being devoid of influence when placed horizontally in an east

and west line, near a compass, became strongly magnetic when placed upright, or proximately so; had its polarity reversed, by turning it with the contrary end downwards; and again became neutral when laid on the horizontal east and west line. These phenomena were the simple results of terrestrial induction. But if the same bar, while held in an upright position, or inclined in the axial direction of the earth's magnetism were subjected to percussion, or other mechanical violence, not only did its magnetism become much more powerful than that of simple induction, but it strongly exhibited its augmented polarity when placed in the east and west neutral, or equatorial position; and, however it might be moved about and swung around, without being struck, bent, or violated, its polarity remained the same. Having proved these two propositions by experiment, Dr. Scoresby went on to apply them to the case of iron ships, and to point out that, in consequence of the percussive action to which the material was exposed while the ships were in course of construction, it became as intensely magnetic as it was possible for malleable iron to be. He explained also, that if a ship were built with her head to the north, for instance, she would have a certain and peculiar magnetic distribution, which would be liable to great change on being subjected to vibration or mechanical violence with her head in other directions; and this change would probably be found to occasion an aggravated disturbance if the compasses had been adjusted by fixed magnets. To obviate this evil he had been led to suggest, some years ago, from the experience he had obtained from inductive science, that if an iron ship had been built with her head to the north, when launched she should be vibrated with her head in the opposite direction, or, in case of a steamer, that her engines be fixed in a different position to which she was built; the effect of which would be to shake down, as it were, the extreme magnetic influence of the ship, and to render her less liable to changes when she felt the action of the sea. In the course of an interview with Mr. John Laird, of Birkenhead, iron ship-builder, that theory had been found available in practice; for he (Mr. Laird) had stated that, after launching an iron ship, it had been his practice to have her vibrated in the dock, which had the effect of reducing the subsequent deviation of the compasses, and to enable them to get a better adjustment.

Having been charged with naming only two instances—these insulated cases being the Birkenhead and Tayleur, and one of them doubtful—in which the compasses of iron ships had deviated; he now adduced the cases of the Bosphorus, Propontis, Nemesis, Fame, Three Bells, Pasha, Iron Queen, Madrid, Gipsy, Great Britain, and many others, in support of his proposition, that the magnetic properties of iron ships were liable, under certain circumstances, to cause deviation of the compasses—(and especially in ships going into the southern hemisphere with compasses adjusted by magnets)—such deviations being often sudden and peculiar, and sometimes large in quantity. He wished it to be especially understood, however, that he did not bring this as a general charge against all iron ships; because, probably, the great majority of such vessels made their passages without being subject

to any very extraordinary risks. What he did desire to be particularly borne in mind was, that there was a liability to this compass deviation; and inattention to, or ignorance of, this fact on the part of the commander placed the ship in great danger. The circumstances underwhich a change in the ship's magnetic distribution might be reasonably looked for were then described to be as follows:—such as in a new ship first encountering heavy weather at sea, especially if her course then should be in an opposite or very different direction from that in which she lay on the stocks; on a change of course after a long run in a uniform direction, &c.; and then the circumstances were referred to, where a considerable reliance might be placed on a well-appointed standard compass. An intelligent acquaintance with these important facts, clearly pointed out by inductive science, would, it is obvious, place the captain of an iron ship in a very superior condition for safety, than if relying on a delusive assurance that his compasses were correct. And that inductive science was not to be slighted as theorising, he might be permitted to notice how his inferences from scientific inquiry had raised the quality of our compass-needles to treble their former directive power, and rendered them, if constructed on the principles he brought forward in 1836 at the Bristol meeting of the British Association, almost unchangeable. His improvements had been adopted fully in the navy, and generally by every compass-maker elsewhere. Amongst the remedies for the evil they were discussing, the one in which he had the most confidence was, the placing of a standard compass as far as possible out of reach of the disturbing influences,—namely, at the mast-head. In his Arctic explorations—which, he observed, he had been enabled to prosecute without restraint, from the confiding liberality of the Liverpool underwriters in giving him free permission to deviate, as he pleased, out of his ordinary course, for scientific purposes—in these explorations, extending to 600 or 700 miles of new coast line, he had obtained almost his entire triangulation by a compass at the mast-head, which, in a ship having 17° of deviation in the binnacle compass, were found to be quite correct. This fact might serve as a most satisfactory answer to a gentleman well known in Liverpool, who had stated upon paper that no compass could act in that position, either in wood or iron ships.

In the Mechanical Section of the British Association Dr. Scoresby likewise made a communication, entitled an "Inquiry as to the Principles and Measures on which Safety in the Navigation of Iron Ships may be reasonably looked for," of which the following is an abstract:—

My time was so limited in my paper on the loss of the Tayleur, that I was obliged to leave off in the most critical position—like a doctor called in to a patient, having time only to examine the symptoms and pronounce that the disease was very dangerous, and then called away without being able to say a word of consolation, or offer any remedial advice. The result was, that a gallant officer then present said to me. "Why, you have upset all our plans; you have told us compasses cannot be trusted. How are our iron ships to be navigated? Show us the remedy!" Though I do not admit the responsibility to

give a remedy, it will be my object to endeavour to point out the leading circumstances under which we may expect a fair measure of accuracy in compass-guidance, and the circumstances most eminently calculated to produce compass-changes. But before entering on these points, I feel it important to revert, briefly, to the leading principles developed in my long-made investigations of the magnetism in iron, with reference to the compass-action and its changes in iron ships. And this I am the more encouraged to do, because of the great change which has taken place in my position, as the suggester and promoter of certain scientific phenomena in this department.

Since the first promulgation of these views at the British Association in Oxford, in 1847, I have had to contend with either the denial or non-reception of them from the principal body of scientific men engaged in the consideration of compass-adjustment and compass-action in iron ships. But it is now most gratifying to find, from the paper of Mr. Archibald Smith, a gentleman eminent as a mathematician, and having all the records of Her Majesty's ships, as to compasses, at command, that very essential principle for which I have contended, as to the principles which affect the development, destruction, and changes in the magnetism of iron ships, is admitted and supported. These principles, so supported by Mr. Smith, may (so far as I correctly understand his paper) be thus enumerated:—1. That the magnetism of iron ships in its action on the compass may be represented by a vertical and horizontal iron or magnetic bar swinging round a compass; a mode of illustration which he, Dr. Scoresby, had adopted some years ago, and used in lectures, as well as in his publication, *Magnetical Investigations*, of 1852. 2. That changes in the magnetic distribution and compass-action in iron ships, which he pre-predicted, do take place. 3. That the changes take place in a ship's magnetism by change of magnetic latitude, 4. That there are influences in a ship, derived from the varieties of form and position (relatively to the compass) of particular masses of iron, which may act as natural correctives. 5. That the plan of correcting the deviation of iron ships by fixed magnets (unless for limited voyages) is unsafe, and in going to southern regions aggravates the error. 6. That the twisting and straining of the iron materials of a ship will tend, especially in ships recently launched, to alter the magnetic action on the compass. 7. That it requires time to effect the changes in a ship's magnetic distribution, which ultimately may, in regions distant from the place of building, be effected. Hence, it may be added, all these particulars embodied and expressed in Dr. Scoresby's investigations, and now admitted and confirmed (as he has understood the paper) by Mr. Smith, leave nothing of real objection to his (Dr. Scoresby's) results. And the whole of the results plainly go, he believes, to the establishment of a proposition, of the accuracy of which he has long endeavoured to convince those interested in the navigation of iron ships—that the magnetism of such ships is, in all its qualities, changeable; the most enduring, or apparently fixed, being of a description, changeable under severe straining and mechanical violence, which he has denominated "retentive magnetism." Only one particular, that he

is aware of, in Mr. Smith's exposition, remains at all inaccordant with his (Dr. Scoresby's) conclusions; and that is—the retaining, in the case of two iron ships which have been swung at the Cape, of the deviation in its original direction. But this fact, in so limited an experience, can prove little; and even that to which it seems to point,—the existence of an apparent quality of permanent magnetism—admits, he believes, of a simple (probable) explanation, namely,—that the intense development of retentive magnetism in some heavy masses of upright iron, such as the stern-post, &c., had not encountered sufficient mechanical violence to invert or obliterate their original polarity. Great changes may be expected—1. In new ships first encountering heavy straining or rolling by sea: Case of Tayleur (probably Great Britain) explains. 2. In ships generally, if following a new voyage. 3. In ships long running on one course, and then changing the course. 4. Heavy weather first occurring. A stroke of lightning: Case of Bold Buccleugh.—No large changes may be expected under the following circumstances:—1. In iron ships long in use, and ordinarily pursuing the same voyage, because extreme deviation gets shaken down, as it were, in a medium or average state. 2. Great changes do not take place in the retentive magnetism (by far the greatest portion) in latitudes not further south than the Mediterranean, because, 3. in ships trading in the Channels, or east and west to America, the liability to new or unexpected changes greatly diminishes. In such cases an intelligent captain, observing the changes, duration, alteration, and allowances, may generally run with great confidence. Experience will establish the effect of circumstances in this case. Dr. Scoresby's suggestions for diminishing the dangers arising from the deviation of the compass are:—1. A standard-azimuth compass to be placed on a high pedestal, where (on the Admiralty plan) a position of small deviation may be found. 2. A compass at mast-head for reference will, he believes, be best of all. 3. The wheel-compass required for ships engaged in the home-trade, or traversing mainly parallels of latitude not southward of the Mediterranean, if adjusted with magnets and pieces of iron, may not be then unsafe, where reference may always be had to the standard for verification. 4. No standard compass in great distances. 5. Care in selection of compasses, to have ample directive force. His improvements had trebled the directive force, weight for weight, of the compasses used in the navy up to 1839 or 1840. 6. Captains must, on all opportunities, take observations, for verifying their compasses, by azimuth compasses, stars, position of land, &c. 7. Captains should have a special knowledge for the charge of iron ships—for here, in addition to the ordinary dangers of navigation, is a new source of error and misguidance, as to which it is most important they should never be thrown off their guard.

NAVAL ARCHITECTURE.

Mr. Scott Russell, in the Mechanical Section of the British Association, gave a lecture upon the "Progress of Naval Architecture and

Steam Navigation, including a notice of the large ship of the Eastern Steam Navigation Company." It was mainly in respect to speed that the great improvements in the last twenty years had been made. Within that time the principle and the means of gaining speed had become definitely known, and this Association had had a great deal to do with the establishment of that principle, which consisted mainly in the particular formation of the water-lines of the vessel. The old ships had a round, bluff, duck's-breast bow, with a sloping narrow stern. At length the idea was arrived at of making a boat with a bow the water-lines of which should correspond with the wave of the sea itself, which should gently and gradually divide the particles of water, which would then give a quiet and easy passage to the vessel entering, whether propelled by steam or by sails, without resisting their progress, and heaping a mound of water before the bows, as in the case of the old bluff round-built vessels. It seemed now to be universally admitted in Europe and in America that, if a ship-builder wanted to have a very easy and fast-going ship, he must give her bow, not the round convex line formerly adopted, but a fine, long, hollow line, such as might be observed in all the recently-built vessels. Practical men, when they desired to build a fast ship, saw that they must now no longer use the convex water-line, but they must build with a hollow water-line at the bow,—and in this consisted the great revolution which had taken place during the last twenty years. Whereas formerly the broadest part of the vessel was only a third part from the bow, the broadest part was now nearer to the stern than to the bow in proportion of two to three, so that the shape of the ship under the water was very nearly reversed. The ship out of the water might remain very nearly the same, but where she cut the water the lines were as he had described. It was on this principle that American clipper-ships and English ships which happened to be very fast were built, and upon which he would say, without fear of contradiction, every vessel, to gain anything like sixteen miles an hour, must be built. Now there was, in addition to this, another very important principle which had been discovered. That was the virtue of the length. It used to be a dogma in the time of his pupilage that no steam-boat could ever by any possibility go faster than nine statute miles an hour. He was born and bred in that belief. Nine statute miles an hour was the creed of his instructor in ship-building. At that time they had very short vessels, and they endeavoured, by putting enormous power in them, to compel them to go through the water whether they would or not. He remembered being present at the trial trip of a vessel out of which had been taken 50-horse power engines, and engines of 70-horse power substituted. It was a most extraordinary fact that she only gained something like a quarter of a knot an hour by that enormous addition to her power and fuel, because she had not sufficient length to go, by any force, at a high speed; and the more she was driven through the water, the greater was the resistance made by the water which she raised before her. The principle was ascertained, that, if you wanted the particles of water to go out of the way of the vessel when going very fast, you must give the particles more time to

do so. Now, this might appear a contradiction in terms, but the faster the vessel was to go through the water, the more time must be allowed to the particles of water to give way. It was found that it was more easy to push a vessel with an elongated body through the water, at great speed, than the short vessels which had been in use. This was reduced to a regular principle, the result of which was, that it was now certain that 24 feet of length in the entrance lines of a vessel would give eight miles an hour easily; to go at sixteen miles an hour the entrance lines should be 96 feet long. To give twenty-four miles an hour the entrance lines should be 216 feet long, so that they could not expect to get twenty-four miles an hour until they had made up their minds to build ships something like 400 feet long. From all the experiments he had made, and had seen made, these facts were undoubted. The clipper-ships and fast steamers had lengthened their bow-lines until they had got the necessary length for speed, and in any vessel which had got the reputation of going sixteen miles an hour, he believed they would find that to be the fact. Indeed, he did not believe there was in existence a vessel shorter than 180 feet which could go sixteen miles an hour, and if there were any such vessel forced to go more than sixteen miles an hour, it was at an expenditure of power which was perfectly preposterous. They would therefore perceive why such a large vessel as the Himalaya had such great speed. The Himalaya had a length of 350 feet, and should have the greatest speed for the smallest power of any merchant vessel hitherto. If, in a like manner, they looked at the large clipper-ships of 2,000 and 3,000 tons burthen now built, they would find that the principle was taken advantage of, and that their bows were elongated to a great length. But what else was being done? The owners of the clipper-ships were finding out that, by the lengthening of the bow, and making the lines more hollow, they could reduce the sails and spars, and yet preserve their speed, finding that the ships could now do in the water what force of canvas could never alone accomplish. Like every truth, the shape of a vessel had been long since found out and lost again. The old London wherry was built as perfectly upon the lines he had described as if it had been mathematically constructed upon them. In India the boats were made precisely upon that form, and they were the fastest boats in the world, as a class. The Turkish caiques had the same shape, and they were very fine vessels. In Spain they had arrived by some means at a form not very different, and throughout the whole of the last war the Spanish vessels were the best vessels, and the best England took. The smugglers, because they risked their necks upon the speed of their ships, quickly found out what shape was best, and some of the most beautiful ships that ever came into our possession in that way were built in that form. The Americans had made very early an experiment of the kind in steamboats. They lengthened their steamers at a very early period, and they now generally built upon this plan and with the hollow lines. They had done wonders in this way, and he believed in England wonders were also being done. It was not easy to carry the elongating of the vessels much further in wooden ships, because they could not

get timber large enough, and it was impossible to make it strong enough by joining; but he believed Professor Fairbairn had discovered the means of joining iron so as to make it equal in strength to solid metal. Having alluded to the building of the Great Western, and subsequently of the Great Britain, and the prophetic doubts expressed at first regarding the fate of each, Mr. S. Russell proceeded to describe the great vessel now being built by him upon the Thames, for the Eastern Steam Navigation Company, to trade with India and Australia. He showed how the difficulty of carrying coals, and having to stop for them and buy them at high rates at St. Vincent and the Cape of Good Hope, and sometimes at the Mauritius, created such an expense that no freights could cover; he showed how it became necessary to construct a vessel large enough to carry her own coals all the way. When, therefore, he told them that the vessel being constructed was expected to make the voyage to Australia in 30 or 33 days, carrying a sufficient freight, with 500 first-class, 600 second-class, and 1,000 third-class passengers, having three large tiers of decks, 8 feet each in height—that she was 675 feet long, 83 feet beam, 60 feet deep—when he told them that he had just measured St. George's Hall, and found that it would not fairly represent this ship, being only 169 feet instead of 675 feet long—that up to the top of the hall it was only 82 feet high, and up to the spring of the arch about the height of the ship—that the breadth of St. George's Hall was only 77 feet, being 6 feet narrower than the hold of the ship, it would give them the nearest approximation he could convey to the size of the vessel. Mr. Russell concluded by a prediction, in eloquent terms, of the glorious effects to civilization which would ensue from the noble rivalry existing at present among individuals and nations in the advancement of science. In reply to a question afterwards put to him, he stated that the huge vessel which he had described would draw 20 feet when light, and 30 feet loaded.

METHOD OF CONSTRUCTING AND FITTING A COFFER-DAM, OR CAISSON, TO REPAIR A SHIP.

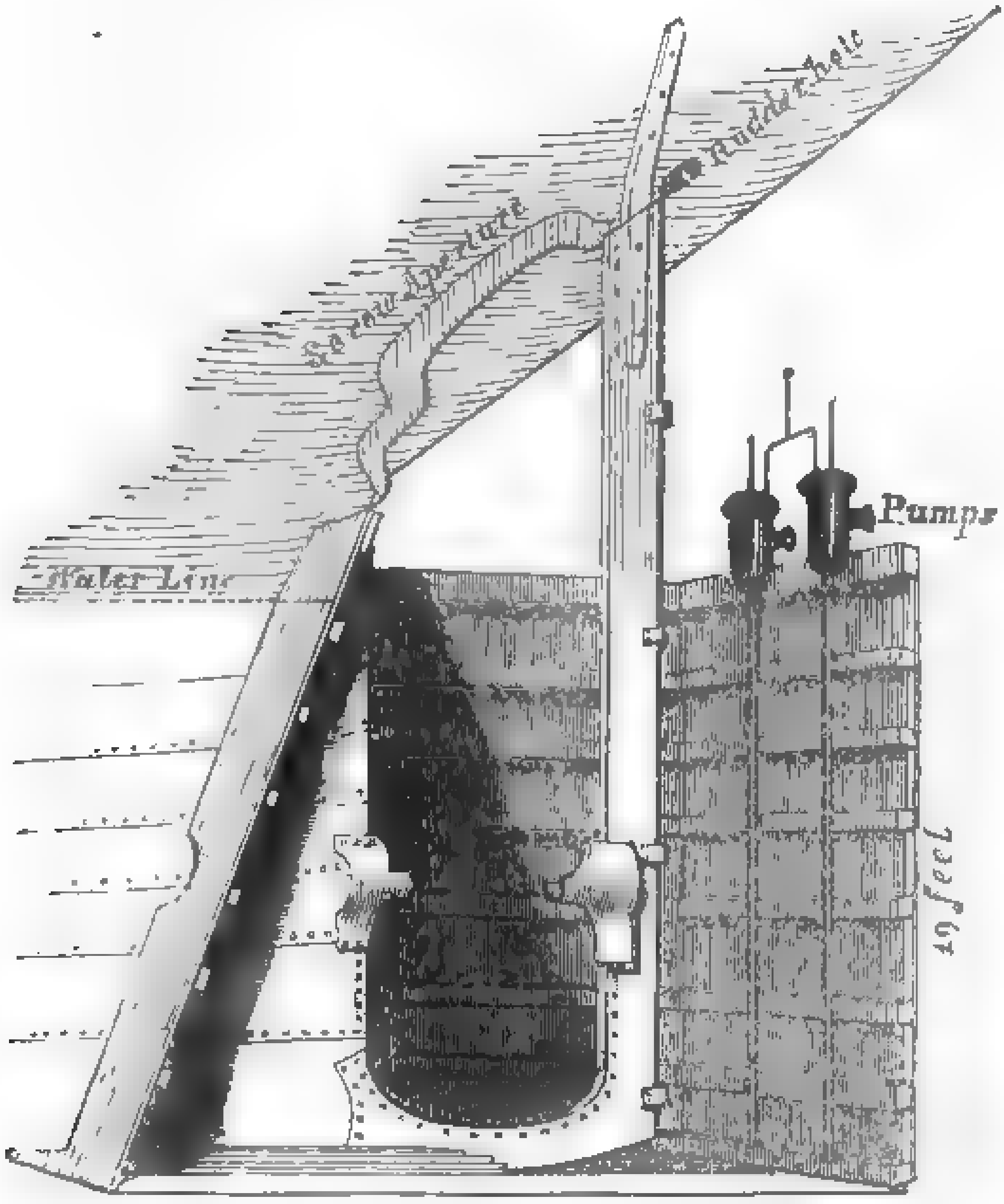
STEAM SHIP "CRŒSUS," BERRY'S BAY, SYDNEY,
July 17th, 1854.

[*To the Editor of the Mercantile Marine Magazine.*]

SIR,

Knowing that one great object of *The Mercantile Marine Magazine* is to disseminate professional information, I send you a sketch of the caisson I have had fitted to the above vessel, to repair some damage done to the plates about the keel, and thereby stop the formidable leak which had been caused by the vibration of the rudder-post. In addition to the particulars furnished by *The Sydney Morning Herald*, I subjoin a few lines, giving an account of our proceedings.

You will most likely have heard that we sprung a leak on our outward passage. The mode of repairing my ship at a place where I knew there were no docks naturally engaged my attention, and I determined, in the absence of better means, to apply the machine, of which I send the sketch, and which is very little different from my



Strengthening pieces on each side of Keel. Stern-post. Rudder-post.

The port side supposed to be away. The stays, cross-beams, and shores, omitted for clearness.

first rough draft. It was built on shore of strong, hard wood framing, well bolted and kneed together, then planked with 3-inch deals, and finally caulked all over. The fore-part is made sloping; for it struck me that as I was pretty sure there were no repairs wanted before the stern-post at the upper part, by adopting the sloping line, the aperture at that part (except where the enlargement for shaft and the keel come) might be nearly parallel, and thus avoid much difficulty in fitting it to the small

of the ship—also stronger. When launched, the unwieldy mass tumbled over on one side, and was thus towed to the *Crœsus*. Then it was trimmed upright with tackles, and weighted with chains till the buoyancy of the wood was counterbalanced—then placing it right astern, it was lowered forward with tackles, and with a good deal of contrivance, finally fixed in its place. In doing this the chief difficulty consisted in receiving it on the keel, which, it may be observed, is curved, and has a flange or sole-plate on it. This, in conjunction with the swell round the shaft, and also the necessity of the aperture fitting as closely as possible, added very much to our trouble. When in its place, a diver, with his usual apparatus, went down and caulked the space left between the ship and the caisson at the fore-part; the pumps were manned, and the water gradually thrown out. As its level lowered inside, it was necessary to place strong cross stays from side to side, and also diagonal ones in the corners, to resist the enormous pressure (about 100 tons) from without. Other shores and guys, as were deemed necessary, were added, till firmly secured in its place. I soon had the satisfaction of seeing it dry, and of descending and examining what damage was done and what repairs were requisite. It is perfectly successful, and the workmen work in it almost as well as in a shop. It is necessary to have hands to attend the pumps day and night, as it is impossible to make it absolutely tight. One thing I found very effectual in tightening it: after the rough caulking, I had a long strip of canvas well thrummed and passed round at the junction of the ship and caisson—this was drawn towards the narrow space and wherever any leak existed materially assisted in reducing the quantity of water made. I think I need add nothing more, save, perhaps, to mention—that when we have done with the contrivance, it can be fitted to any other vessel, with but little alteration, to repair a rudder, examine a screw, or anything of that description.

I am, Sir, your obedient Servant,

JOHN VINE HALL.

The following additional particulars are from the *Sydney Morning Herald*:—

Whatever else calls for admiration, the repairs going on and the means of effecting them are of great interest. During the voyage from England the *Crœsus* had made so much water that it became necessary to ascertain the cause, and to remedy it, if possible, before venturing to return home. Every attention was paid to ascertain the locality of the leak, and at length it was found right aft. The extent of the damage or disarrangement was not apparent, but it was evident that the after part of the vessel must be made dry. Captain Hall knew there was no dry dock in Sydney, and he became naturally anxious to devise the best means, under the circumstances, to repair the defects; and in the event of no other facilities being afforded, he determined and planned a caisson. However, such an expensive experiment was not to be entered upon without due deliberation, and as the Adelaide, after lying in Sydney some months, had gone to Launceston, to take

advantage of the greater rise and fall of tide, Capt. Hall sought information both from Capt. Henderson, of the Adelaide, and residents at Launceston; also of others in Sydney conversant with the river. From data thus gained, Captain Hall decided that for several reasons that plan was ineligible, and determined to adopt the original one of a caisson. He had made a rough draft of it, but as it was very essential to enclose the whole of the damage, he availed himself of the services of Messrs. Beddome and Co.'s diver, and having within six hours of casting anchor got his report of apparent damage, he decided on the dimensions, and on the next day applied to two different parties for a contract to make the same; finally giving it in favour of Mr. Dawson. The execution of the work was most satisfactorily accomplished—it occupied some three weeks—when the huge machine was launched (not without difficulty), and floated off, and at length attached to the ship. We can imagine with what satisfaction they saw these efforts crowned with success, and were enabled to see the damage—with the convenience of repairing it. So justly was the locality of the leak estimated, that the ship has made no water since. The difficulty of fitting it to the ship was great, from the curve and peculiar shape of keel, also from the projection of the run through which the shaft passes. It was found that in consequence of there not being sufficient stiffness given to the keel, the effort of the rudder caused a flexion of the rudder-post, and a twisting motion (the stress of which being thrown on the after ends of the lower plates,) loosened many of the rivets, displacing some, and thus causing a considerable leak. But we are enabled to state that the method adopted to remedy all defects, will render the keel and rudder-post very much stronger than ever, thus preventing the slightest chance of a recurrence of the accident. Excepting this small spot, the ship is a model of strength and beauty. There is also a means of proving the soundness of the work when complete, before removing the caisson, by filling the after compartment with water under great pressure; this will indicate the smallest leak.

The caisson is constructed of strong hard wood framing, and planked over with three-inch deals, and then well caulked. It is a huge box, sloping from the base towards the top, at the fore part only, being at base 22 feet, top 15 feet, depth 20 feet, breadth 9 feet; displacement of water 100 tons; and when pumped out, as might be expected, altered the trim of ship, raising the stern 19 inches. When once fitted to the ship, it was necessary, as the water was pumped out, to put in strong cross-beams to prevent collapsing. From the extreme difficulty of making such an apparatus perfectly tight, two 7-inch pumps are fitted and attended to day and night, so as to keep it dry.

This contrivance points out more than ever the want of docks in Sydney, and the success which will follow their construction, and the necessity of hastening the completion of the docks in progress.

Captain Hall mentioned the hearty co-operation and assistance received from Captain Towns, and also the readiness with which the Australasian Steam Navigation Company had lent their diving apparatus, and proffered any other assistance in their power. Great

credit is also due to Mr. Smith, first engineer of the *Crœsus*, whose zeal and ability in seconding or furthering the work Captain Hall speaks of in high terms.

We wish Captain Hall great success in his anxious undertaking; the responsibility is of no ordinary kind, and when done a great feat will be accomplished. We hope also that the Company will appreciate the services of the officers of their ship *Crœsus*, and the way in which she has been conducted, both in coming hither and during her stay in this port. The oversight or miscalculation of the builder has entailed fearful expenses on the Company, and great anxiety to those in charge of her.

RULES TO PREVENT THE COLLISION OF SHIPS AT SEA.

THE following remarks are extracted from the manuscript of Captain William Toms, who is engaged in the preparation of a work on the Practice of Navigation at Sea:—

Two ships approaching each other on opposite tacks, close hauled, and it is doubtful which will weather the other, the one on the starboard tack must keep her reach, while the other on the port tack must give way; but if, through ignorance or stupidity, the one on the port tack does not bear up, and a collision is unavoidable, then both vessels should put their helms a-lee, by which means they will be thrown in the stays, and should a collision take place, the shock will be very much lessened.

Two ships meeting each other right ahead, and steering opposite courses, both having the wind free, the rule is, for each to port their helm, by which means they will pass each other on the port side. But if one of them should be close hauled, then it is the duty of the other, which is going free, to pass to leeward of her.

But this rule should not be too hastily adopted in the night-time, because, if a vessel or her light is suddenly seen on the starboard bow, were each to port the helm, a collision would take place. This rule, therefore, is only applicable when vessels meet each other right ahead, or a little on the port bow. Steam vessels, which are always supposed to be under the command of their helms, are deemed to be vessels going free. The commanders of these vessels say that if sailing vessels would keep their proper course, on the approach of a steamer towards them, the officer in charge of the deck would then see exactly the state of the case, and steer so as to clear the sailing vessel, and thereby prevent a collision; and that it frequently happens that those on board the sailing vessels become alarmed, and keep changing their course without any fixed principle, thereby mutually deceiving each other as to their intentions.

Ships meeting each other on a dark, stormy night, or in foggy weather, the utmost presence of mind on the part of the officer of the watch is necessary to prevent collision. Many melancholy instances are of frequent occurrence of collisions which take place under the above

circumstances. On a vessel or her light being seen in this case, the first thing that should be done is to ascertain in which direction the other vessel is steering. This can be done even in the darkest night, by simply taking the bearing of her light when first seen, and again in a few minutes afterwards. Then the difference of bearing will point out at once the direction in which she is steering. Then, but not before (as is too often the case), the course may be changed to go clear of her. But if the light does not seem to change in the bearing, the vessel must either be coming directly before you, or your vessel is coming up with her, In the former case, when seen right ahead, or a little on the port bow, the rule is to port the helm, but when very near on the starboard bow to starboard the helm; and were each vessel to obey this general rule, a collision would be impossible.

Ships running in the night-time should always, as a standing rule, pass astern of those they may meet ahead, close hauled.

The cause of most of the collisions which take place is by altering the ship's course previous to ascertaining the direction in which the other vessel is steering, and thereby causing the very thing they are desirous to avoid.

The proper way for each vessel to do after their respective lights have been seen by each other, is to continue their course, and to calmly but vigilantly watch the difference in the bearing of the lights, and which will at once show the direction in which the other is steering. Then the course may be changed if necessary, to prevent collision.

And in all cases when practicable—that is, when the movements of one vessel can be seen by the other—the intention of the one should be made manifest to the other by a broad sheer in the direction in which she means to pass. This will save a great deal of anxiety of mind on the subject when the vessels are approaching each other.—*American Merchants' Magazine.*

NATIONAL LIFE-BOAT (LATE SHIPWRECK) INSTITUTION.

PRESERVATION OF LIFE FROM SHIPWRECK.

A SPECIAL general meeting of the friends of this institution has been held at its offices, John Street, Adelphi, to consider the recommendation of the committee to alter the title of the society. Mr. Thomas Chapman, F. R. S., in the chair. The chairman observed that it was not without some reluctance the committee had recommended that the title of the institution, which had now been in existence upwards of thirty years, should be changed; but they had yielded to a sense of duty on this point, as they had reason to believe that by doing so the important objects of the institution, which would not in any way be altered by the change of title, would be greatly advanced. A resolution was then passed that the title of the institution be hereafter *Royal National Life-boat Institution, founded in* 1824, *for the Preservation of Life from Shipwreck.* It appears that the

Board of Trade has transmitted a communication to the institution, which had for its object the forwarding of saving life from shipwreck. The conditions of receiving aid from the Mercantile Marine Fund are to be :—1. That the institution provide a life-boat and boat-house of a kind and in a situation satisfactory to the Board. 2. That the boat and boat-house be subject to the inspection of the board's officer. The nature of the assistance contemplated by the board is that of giving rewards for the manning of boats in circumstances of danger, and for the preservation of life. The average cost of a life-boat, with boat-house, and a carriage to transport the boats readily from place to place, is about £300 ; so that to meet the conditions of the Board of Trade, ample scope is left for the exercise of benevolent exertions. The whole loss of lives during the year, as far as could be ascertained, amounted to 989. Surely with such appalling facts as these before them, the British public will not withhold their assistance to provide life-boats on the coasts. On the contrary, we believe that a liberal response will be made to the appeal of the committee for additional contributions, and that the great national cause of preservation of life from shipwreck will not be allowed to form an exception to the many other good causes so benevolently and liberally supported in this country. All now that is required is hearty and cordial co-operation to see every suitable place provided with life-boats. Life-boats were ready to be sent to Skerries, on the coast of Dublin, to Boulmer, Northumberland, and Appledore, on the coast of Devon; the latter being the fourth boat the society has stationed in this dangerous locality during the last thirty years.

By the will of the late Mr. Samuel J. Lowe, of Lower Chapman Street, the sum of £1,000 has been left to this old and valuable institution. From the Admiralty returns just printed, it appears that in the year 1853 there were 832 vessels wrecked on the coast and in the seas of the United Kingdom. Of these 369 were totally wrecked, 52 were sunk by collision, 386 were seriously damaged and had to discharge their cargoes, and 25 were seriously damaged by collision. The greatest number of wrecks, 123, occurred in December, and the fewest, 26, in June. 253 wrecks occurred on the east coast of Great Britain, 76 on the south coast, and 130 on the west coast; 81 wrecks took place on the coast of Ireland; 6 vessels were cast on shore at Scilly, 11 at the Channel Islands, 3 at Orkney and Shetland, and 12 at the Isle of Man. The remaining 260 wrecks occurred in the surrounding seas. The loss of lives during the year, as far as has been ascertained, amounts to 989. There are 108 life-boat stations, and 131 mortar and rocket stations in England; 7 stations for life-boats, and 15 for rockets and mortars in Scotland; 10 stations for life-boats, and 22 for rockets and mortars in Ireland.

In consequence of the many applications for additional life-boats on dangerous points of the coast, the society is in much need of funds to enable it to comply at once with such demands.

CERTIFICATE CANCELLED.

A charge of habitual drunkenness having been preferred against Thomas Burt, late master of the *Hyndford*, an investigation has been instituted by the Local Marine Board of Glasgow, under the provisions of the Mercantile Marine Act, and that Board having found him guilty of the above charge the Board of Trade have determined to cancel his certificate.

LEGAL DECISIONS.

Glasgow Circuit.—*Marine Insurance.—The ship Margaret Skelly.*—M'Gavin and Thomson, Shipowners, Glasgow, *v.* Mungo Campbell and others.—This important case was tried before Lord Deas. The issue sent to the jury for trial was to the following effect:—

"Issue in the action at the instance of Messrs. M'Gavin and Thomson, merchants in Glasgow, and partners thereof, pursuers, against Mungo Campbell, merchant in Glasgow, and others, underwriters on the ship *Margaret Skelly*, defenders.

"It being admitted that, on or about the 1st of September, 1851, the defenders granted the policy of insurance No. 6 of process, whereby, in consideration of certain premiums paid by, or for the pursuers, sole owners of the ship *Margaret Skelly*, of Glasgow, the hull and materials of the said ship were insured by the defenders respectively to the extent of the several sums annexed to their names, as set out in said policy, and in the schedule hereto annexed, amounting in all to the sum of £6,000, against the perils stated in said policy, for the period of twelve months, from the 25th of July, 1851, till 24th of July, 1852, both inclusive; and that in all places, in port, or at sea, the said ship being valued at £6,000:—

"Whether the said ship, by and through injury sustained in or about the month of October, 1851, and during the currency of the said policy, became a wreck, and was totally lost; and whether, under the said policy, the defenders, or any of them, are indebted and resting-owing to the pursuers in the sums attached to their names respectively in the said policy and annexed schedule, or any part thereof, with interest as libelled?"

Mr. Macfarlane opened the case for the pursuers. He said: From the issue before you, you will observe that the question is one of sea insurance. The question is, whether the pursuers, as owners of the ship *Margaret Skelly*, having insured that ship with the defenders, as underwriters, for a certain sum, are not entitled to recover the amount insured? The circumstances, so far as it is necessary for me to lay them before you, may be very shortly stated.—

The pursuers have for some years been owners of the *Margaret Skelly*. In the spring of the year 1851 they prepared to send that vessel, and did dispatch her, on a trading voyage to the East Indies. She arrived there, and was there for some time without meeting with any disaster, and while she was at Bombay, the pursuers, as the owners, effected the present insurance with the defenders, who are gentlemen well known in Glasgow as underwriters. The insurance so effected by them was what is called a time policy, viz., from the 25th of July, 1851, till the 24th of July, 1852. That was the period of the insurance, from July, 1851, to July, 1852, and the defenders undertook the risk according to certain proportions to which I shall ask your attention more particularly by and by. It was a time policy in that sense, and it was also so framed as to preclude any difference afterwards as to the value of the ship; it was stated that the insurance should amount to £6,000. Now, the insurance being so effected in this country about the 1st of September, 1851, it afterwards was ascertained that in November thereafter, the ship, having in the meantime gone from Bombay to Calcutta, had undertaken a voyage from Calcutta to the Mauritius; and, accor-

dingly, in October she proceeded on that voyage from Calcutta to the Mauritius. This was in October. Then about the end of that month she encountered a violent storm, amounting to a hurricane, and she was very seriously damaged. According to the accounts that will be given to you in the evidence it is almost a miracle that she survived. The master, Captain Topping, who commanded her, by his skill and energy, with the assistance of the crew, succeeded in bringing her back a wreck to Calcutta, where she arrived on the 6th of November. Now, you will see, gentlemen, that the master being in a foreign port, far distant from the owners, equally distant from the insurers, and far away from those truly interested in the vessel, was placed in a somewhat delicate position; but I think you will come to the opinion, from the evidence, that he acted with remarkable prudence and sagacity. He took the usual protest, and acting in some degree upon the advice of some gentlemen upon whom he could rely, he obtained an inspection of the vessel by skilled individuals in Calcutta. Acting again on their suggestion he got the vessel surveyed, and then proceeded to obtain estimates from the most respectable men in the trade in Calcutta,—possibly not so eminent as shipbuilders on the banks of the Clyde, but he obtained the best he could,—and having then made all the necessary inquiries, by survey and otherways, so as to obtain a correct and fair judgment as to whether this was a total loss or a loss that might be beneficially repaired, he communicated the result to the owners in this country, and these gentlemen had no hesitation whatever in coming to the conclusion that this was a total loss, and that no prudent owner, no prudent man, under the circumstances, should be expected to repair that vessel. Accordingly they duly and in time intimated that this was a total loss, and that they claimed against the insurers as for a total loss. The defenders, however, seemed to demur at this, and they, it appears, had put themselves also into communication with their mercantile agents, parties acting for them in Calcutta (a highly respectable house), and the underwriters in the meantime said they would not hold themselves responsible for a total loss, denying that it was a total loss, and, in a word, they refused to pay the claim of the insurers—the vessel in the mean time lying there at very great expense, and dock dues going on day after day, at a very serious rate. Captain Topping, under these circumstances, resolved to have the remains of the vessel sold for what they would fetch. The wreck was accordingly sold, and the proceeds remained awaiting any question between the owners and insurers. He sold them by public advertisement, in a manner perfectly open and fair, and she was disposed of for somewhere about £700—that was the wreck of old materials—and then, as you will find afterwards, fitted up for a temporary purpose by the purchaser. Such was the fate of the *Margaret Skelly*, so far as the owners in this country are concerned. All this was done—the sale took place under the circumstances to which I have referred, and Captain Topping acted to the best of his judgment for all concerned. Now these generally are the circumstances in which we are now placed,—

Lord Deas:—Did you say the sale was made by instructions from this country?

Mr. Macfarlane:—Notice was given to the agents for the defenders, who by this time had sealed instructions from their employers. There was no alternative, therefore, for the pursuers but to bring their action—an action for the total loss, the loss which has been sustained. We are therefore now before you, and having stated the circumstances, let me direct your attention to the issues. [Here the counsel read a copy of the issues as above.] Now, gentlemen, what is the defence in this case? No question of seaworthiness has been raised. It is not made matter of contest on the record in this case that the ship, the *Margaret Skelly*, was not seaworthy. That is a question which sometimes gives rise to a good deal of trouble, but we are not embarrassed with it at this time; there is no such question before us. Then there is no question, again, that this vessel did encounter a very violent storm, and was most seriously injured. Whether the injury she sustained amounted to a total loss is another question, or there would not probably be any dispute about it. There is no question here, again, as to the value that you must assume to have been involved in this risk. *That* with parties is very often the case before they could contemplate what storms a vessel might encounter, or whether she might encounter a very serious loss or not. The parties here, as they very often do (desirous of saving all future dispute), come to an

agreement, which is made part of the contract between them, that the value of the ship for all purposes of insurance should be taken as at £6,000, so that there is no question as far as that is concerned, and it is never raised in the record. Then the only question that is raised by the defenders we have very distinctly stated by them in their plea attached to the record, and then we have it given notice of to us, as they were bound to do, what their point was, and we have it very distinctly stated in these words. "The pursuers cannot recover from the defenders the full sum insured in policy, on the footing of a total loss, in respect that the *Margaret Skelly* was capable of being beneficially repaired at Calcutta, and her value when repaired would have exceeded the sum necessary for repairing her."—"In the circumstances above stated," say they, "the defenders were justified in refusing to accept of the abandonment, and they can only be held liable as for an average loss." Now that is the question, and the sole question, so far as I understand, according to the record: What was the damage so received by the *Margaret Skelly*, and was it so extensive as to have rendered her not repairable beneficially to the parties? Would the amount of repairs have been greater than the value of the vessel after she was repaired—of course taking into view, what you will quite understand on all these occasions, that the value of the wreck or the materials must also be added to the repairs? I shall content myself with the evidence—and a great body of evidence it is on this point—and I hold that here there really can be no question for a jury; that no jury can have any reasonable doubt that this vessel could not, and would not, be repaired by any prudent owner. According to my understanding, and the information laid before us, it is not even a narrow question. A very large sum indeed will be found to have been really the balance after fairly calculating the value of repairs, the value of the old materials, and what the vessel would fetch after being repaired. I need not tell you that if a vessel was found to have cost £5,000 before being put into a proper state of repair previous to going to sea—I need not tell you that that is a question which no reasonable man would make on the subject—that no man in his senses pursuing commerce or business with a view to beneficial results would ever dream of repairing such a vessel as that. Certainly not. Now, gentlemen, I have just a single word to say before sitting down, and it is necessary to explain the meaning "total loss." It is not that a vessel is completely under the water and is no more to be seen in any shape whatever. That is not the case. There may be a total loss where there is a thing yet remaining which may be called a vessel; but the question for you to consider in this case is, is there such a thing left as a prudent and sensible owner would ever dream of repairing, or where the cost of repairing would not be equal to the entire value of the vessel after being repaired? That is entirely the question which arises here, and so far as I am aware, that is the only point on which any question can arise. Without detaining you further I will now proceed to the evidence.

Capt. D. Topping was examined for the pursuers by Mr. Penney. He deponed that he was at present employed in superintending a work in the neighbourhood of Glasgow, and had been previously 44 to 45 years at sea, and had commanded vessels for 27 years of that time. He was master of the *Margaret Skelly* on her last voyage, upon which she sailed from the port of London on 11th February, 1851. She had been re-coppered and fitted up at London with a suit of new rigging and some new sails, and was in every respect well found and fitted for her voyage. It was a voyage that was intended to last for three years. The cabin was fitted up for passengers, which she had frequently carried, having all the necessary accommodation. She proceeded on her voyage, and landed first at the Cape of Good Hope, then at Bombay, and then at Calcutta, where she took in a cargo for the Mauritius. The *Margaret Skelly* sailed from Calcutta about the 10th of October, and the Sand Heads on the 19th of that month, and carried a cargo of rice and sundry other articles. The vessel then was even in better condition than in London, for they had a great deal of time to put things in better order. Upon leaving Sand Heads, and just when they had got free of the pilot, they encountered a tremendous hurricane, which lasted fifty hours. It was so severe that they were obliged to cut away the masts and throw overboard a great portion of the cargo—besides keeping the men constantly pumping. The vessel was on her beam-ends before cutting away the masts—the sea breaking over her in all directions, sweeping the decks of every thing. All the boats were carried

away, and the vessel was strained very much—so much so, that they expected every moment to go down. When the storm abated, she was got into port with very great exertions. By rigging jury-masts they got back to Calcutta on the 6th of November. Witness then got the ship moored, noted a protest as to her condition at Calcutta, and commenced to discharge the cargo. The consignees at Calcutta were Messrs. Gillanders, Arbuthnot, and Co., and he communicated with them on arrival. There was a survey of the ship on the following day by Messrs. Hill and Oakes, two regular surveyors. They examined the vessel thoroughly, as far as they could see. Witness next got several estimates from shipwrights and others as to the cost of having her repaired, and found the price so large that it would have been utter folly to have gone on with them, and he advised the owners at home to that effect, also the agent of the insurers at Calcutta, and others. This opinion was concurred in by all the practical men who had examined her along with him.

Captain Edward Oakes was next examined for the pursuers: Witness lives in England now, to which he had returned from India in June last. Had been 39 years at Calcutta. Previous to settling at Calcutta, had been at sea for 25 years, and commanded a vessel. Had become a ship surveyor at the port of Calcutta in the year 1828, and continued in the same capacity until 1835. Had a good deal of experience in surveying ships. Recollects about the *Margaret Skelly* very well, and examined her in November, 1851, along with Captain Thomas Hill, of which survey they gave in a joint report. He thoroughly satisfied himself that the *Margaret Skelly* would have required all the repairs mentioned therein to make her seaworthy, and such estimates do not always embrace everything that is sometimes afterwards required. Knew Thomas Viall, of Calcutta, who was an experienced and proper man to give in estimates for such repairs. Also knew Messrs. Cochar, Stewart, and Co., and Reid and Co., and Mr. N. P. Thomas, and Thomas Reeves, and Charles Bremner, who were all experienced men in their line, highly respectable, and he was satisfied that the owners or partners of a ship could with propriety and safety depend upon estimates from such men. Captain Hill and himself taking these into consideration, estimated the entire cost of fitting out the *Margaret Skelly* completely for sea at 30,000 rupees. And the value of the ship, after being so fitted for sea, being 30,000 rupees, witness did not think that Captain Topping, as acting for the owners, would have been justified in getting her repaired.

The deposition of Captain Thomas Hill, which had been taken at Calcutta by commission, was then put in and read. It was entirely in support of the evidence of the previous witness. The evidence of Mr. Walker, who bought the vessel, was next read, in which he described her disabled condition, and said in buying her it would have been to break her up, except from the circumstance of having an old French vessel with the materials of which he repaired the *Margaret Skelly* for the country trade. He added that no prudent owner or underwriter would have repaired her to make her a first-class vessel, as the expense of doing so would have amounted to far more than her value. He himself merely patched her up, and from the way in which he repaired her she was unfitted to go round the Cape, or upon any long voyage. Proof was then given as to the value of the provisions and stores furnished for the voyage by the mate of the vessel, and estimates of work required for her repairs, with printed declarations by Mr. Mullick, Mr. N. P. Thomas, Mr. J. D. Simpson, shipbuilders, and others, were given in and read as evidence—all of which declared that the vessel was a complete wreck, and unfit to be repaired, except at an expense much beyond her value.

Mr. William Rankin, shipbuilder in Liverpool: Saw the vessel at Calcutta. She was a total wreck. Would not have repaired her even had she been his own. Would not have taken a gift of her on condition of repairing her.

Mr. James Cochar, shipwright, formerly of the firm of Cochar, Stewart, and Co., Calcutta, was next examined as to the estimate which had been given by his firm for the repairs upon the *Margaret Skelly*. After giving the various details he said: The opinion I formed after making the estimate was that it would cost too much to repair the vessel—a great deal more than the vessel was worth after she *was* repaired. If she had been my property I would not have

repaired her. If she had been so, I, although a shipwright, would have broken her up.

The printed examination of Mr. John Laurie, taken at Calcutta, and the depositions of Mr. William Poole, and Mr. Malcolm M'Intyre, Lloyd's surveyor, London, were next read and given in for the pursuers.—The deposition of Captain James Smith, of the ship *Asia*, was read, after which Captain Hugh Brown was examined for the pursuers. His evidence was in effect that on examination of the *Margaret Skelly* he found her to be a ruined vessel, and that it would have been quite useless to repair her for any profitable commercial purpose.

Mr. Daniel Ferguson, a shipmaster for 25 years, was called for the pursuers. He had seen and examined the *Margaret Skelly*, after her wreck in Calcutta, and found her in a very bad state. He estimated her repairs would have cost from £3,500 to £4,000. And he did not think a prudent owner would have repaired her. It would not have been for his interest.

Several other printed documents were given in and read for the pursuer's case, and among others the written evidence of Captains Dallas and Boyd, who confirmed the ruinous state of the vessel, after which the defenders, without calling witnesses or addressing the jury, made offer of £5,000 to the pursuers, along with the proceeds of the sale of the wreck, making in the whole about £5,900, which was accepted, and the case closed.

Devonport Police and County Court.—*Sea Wages—Transport Ship Conrad, of Plymouth.*—A point of some importance to seamen in the merchant service was lately raised before the justices at the Devonport Guildhall—Whether certain seamen, having performed the voyage for which they had signed articles, and returned to a port of discharge in England, were not entitled to their discharge, or could be compelled to complete the time named as an alternative—viz., twelve months? The particulars of the case were as follow:—

Mr. Charles Findlater, master of the ship *Conrad*, of Plymouth, was summoned for non-payment of £10 wages due to a seaman named Peter M'Kerr.—Mr. Rundle appeared for the complainant, and Mr. R. G. Edmonds for the defendant.

The *Conrad*, of which Mr. Restarick is the owner, was chartered by the government in May last as a transport, for the purpose of conveying troops and forage to Varna. On the 20th May, M'Kerr signed articles at Liverpool, at £4 per month, to proceed on a voyage from that port "to any part of the United Kingdom; thence to Malta and to any ports in the Mediterranean or Black Sea, or wherever a freight may offer, and back to a final port of discharge in the United Kingdom; or for a term not to exceed twelve months." Now, what was wanted was not merely an order from the bench to compel the payment of the arrear of wages due to the complainant; the object, as Mr. Rundle observed, was to decide a question which would affect the whole ship's crew. Having read the articles, Mr. Rundle said it was upon the construction of the words quoted above that he asked their worships' opinion. He then proceeded to show that the voyage had been completed as indicated; and argued that as the ship had now returned to England, to this port, that the men were consequently entitled to their discharge; to which the defendant objected, and on that ground refused payment of the wages. Mr. Rundle next anticipated and proceeded to combat the argument, that as the ship had not yet arrived at a final port of discharge the defendant was entitled to fall back upon the alternative in the articles, and to insist upon the men going to sea again, and continuing in the vessel for a period not exceeding the twelve months. If it was right for the master to insist on this point, it would be equally right, he contended, for the men, under the circumstances, to insist upon the other. The vessel had performed the voyage, and had returned to this port, where she had discharged her stores into the dockyard; but the government having further use for her, the men were required to proceed on a second voyage to the Black Sea, under the same articles. He very much doubted, if there had been no contract with the government and the vessel had so returned, and there was no immediate prospect of a freight, whether the owner would have been willing to have kept the men on for the whole twelve months. He would probably have turned round and sent them all ashore,

alleging that the ship had reached her final port of discharge.—Mr. Rundle then called the master, to prove the voyage to Malta, Constantinople and Varna, where the troops were disembarked, and back to England.—On cross-examination by Mr. Edmonds, however, he denied that they had brought home any cargo, except some stores and bedding, which were still on board; a cask of wine for Admiral Dundas, and some despatches. He did not consider this was a fresh voyage; the vessel had been ordered home to be surveyed and repaired, in consequence of her having touched the ground at Scutari. She arrived at Plymouth, and three days afterwards orders were sent down for her to take in stores (bread) from the Victualling-yard for Varna. He was of opinion, that if the men had wished to remain the twelve months, he could not have discharged them.—Mr. Edmonds replied at some length, and contended that this was not a final port of discharge, for there was no cargo to discharge; and as to the effect of the articles, if the contract was for twelve months, which he contended it was, whilst the necessity for the men's services existed—it could only be dissolved by mutual consent; but that consent they were not prepared to give, as the vessel had not yet reached a final port of discharge; they had only come back to have the vessel docked, and therefore were entitled to a continuance of the men's services until the period named should have expired. The voyage, he contended, had not been completed; the vessel had now to start again, and nothing was shown that she would not be back within the time specified.

The bench having retired for consultation after a short absence returned into court, and said, as they saw "great difficulties surrounding the case, they must decline making an order for payment of the wages."

Under these circumstances the parties determined to have the case re-heard in the County Court, and the particulars having been stated, his honour said, that it was clear the contract with the government had not expired, and it could not, therefore, be said that the plaintiffs had finished their contract. The putting into this port could only be considered as an interruption, and not a termination of the voyage; for supposing the vessel had been bound to Amsterdam, and had been obliged to put into Plymouth and land her cargo preparatory to undergoing any necessary repair to enable her to proceed on the voyage, it could not be called a "final port." Judgment must, therefore, be given for the defendant.

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from September 30 *to October* 28, 1854.

New Lighthouse in Morecambe Bay.—The North-Western Railway Company have erected a Lighthouse upon Mitchell's Patent Screw Pile Framing, on the west end of Clark's Wharf, in Morecambe Bay, at the entrance of the Deep Water Channel leading up to their harbour at Morecambe, and the compass bearings of the said Light are as follows, viz.:—

Walney Light	N.W. $\frac{3}{4}$W.	distant	$6\frac{1}{4}$	nautical miles.
Wyre Light	S.W. $\frac{1}{2}$ S.	,,	$4\frac{3}{8}$	do.
Morecambe Harbour Pier Head Light	E. $\frac{1}{2}$ N.	,,	$5\frac{1}{8}$	do.

On and after the evening of Saturday, the 14th day of October, 1854, a Red Light will be exhibited from sunset to sunrise, which light will be visible in clear weather for a distance of about seven nautical miles.

The said Light will be kept constantly masked to the extent of one-fourth of the circle facing Heysham Lake and the Lune Estuary.

A Round Ball by day and a small Green Light by night will be exhibited on the N.W. side of the House, when there is not less than eight feet of water in the Channel up to the Harbour.

The said Lighthouse is about the same height above the water, and in appearance resembles the Screw Pile Light at the entrance of the river Wyre; differing, however, entirely in the colour of the light.

Five Screw Pile-Beacons have been erected on the edges of the banks on each side of the Channel, to mark the course of deep water which is about midway between such Beacons.

A Fixed Bright Light is exhibited upon the Pier Head at Morecambe from sunset to sunrise.

A Round Ball is exhibited upon the flag-staff at the end of the Pier by day, when there is not less than eight feet of water between the Innermost Beacons and the Pier Head.

And the said Company levy the following dues for the maintenance of such Lights and Beacons upon all vessels entering the said Harbour, the limits of which are defined by Act of Parliament as follows:—"So much and such part of the Bay or Estuary called Mòrecambe Bay as lies between the north side of a straight line drawn from Sunderland Point to Walney Lighthouse, and the east side of a straight line drawn from Rossal Point to Cowper Point on the south-western extremity of the Promontory of Cartmel," viz.:—

Upon every vessel from any port within the United Kingdom, the sum of twopence per ton upon the registered tonnage of such vessel.

Upon every vessel from any port beyond the United Kingdom, the sum of threepence per ton upon the registered tonnage of such vessel.

N.B.—Whenever such dues shall have been paid three times upon the same vessel within the same year, the charge for each additional voyage will be at the rate of one penny per ton register.

Lights on the Coast of Norway.—The following Lights will henceforth be lighted on the 1st of October every year instead of December 21st as heretofore, and will continue so to be lighted until the 1st of April following.

During this period they will burn from the 1st of October to the 20th of March, from half an hour after sunset to sunrise; and after the 21st March, from one hour after sunset to sunrise.

Vigholm Light ...	long. E. of Greenwich,	5° 17′ 20″;	lat.	59° 8′ 40″ N.
Fjeldö Light......	,, ,,	5° 35′	,,	59° 5′ 25″
Bucknesund Light	,, ,,	5° 29′	,,	59° 13′ 15″
Eyletta Light ...	,, ,,	5° 8′	,,	59° 25′ 40″
Esprœr Light ...	,, ,,	5° 10′ 5″	,,	59° 35′ 5″

Flagmarks to indicate Shoals in the Gulf of Bothnia.—A great Flagmark has been set up, on the east side of each of the two Fuingrunds, and on Grundkallegrund, situated in the South Qrarken, east of "Grason," viz.:—

1. *East Fuingrund,* the shallowest portion of which is hardly 2 fathoms deep, with an extent of about 700 fathoms in length, from W.S.W. to E.N.E., in an average of 4 fathoms of water, east of the shallowest spot, at a distance of about 500 fathoms, 5½ fathoms deep, a large mark is moored, the iron cone of which bears an iron Pole 12 feet long, painted White, and furnished at the top with a large Red Ball, which is visible at a distance of half a geographical mile. This Shoal can be sounded up to from the north.

2. *West Fuingrund* has its shallowest spot only from 5 to 7 feet water. The Shoal, which is of a triangular form, has its longest sides 4 and 700 fathoms in length in the respective directions of N.W. and S.E. About 330 fathoms from the shallowest point, and east of the same, in 6½ fathoms water, a mark is set up of similar size and form to that on the East Shoal, but its Pole is painted Red, and its Ball White; it also is visible at a distance of half a geographical mile. This Shoal cannot be sounded up to from the north side with any security.

3. *Grundkallegrund.*—At this extensive Shoal, the limits of which are not fixed, are found alternately deep water up to 10 fathoms and more, great pieces of rock, and isolated stones, one of which is visible above the water. East of one of these shallow points, which has however no stone above the water, a large mark is moored, which has a Pole 15 feet long, the upper end of which is furnished with a Red Streamer. The mark stands in a depth of 9 fathoms, and about 330 fathoms from the Shallows itself. This mark is visible about a geographical mile off in favorable weather. So far as is known, this Shoal, the extent of which from N. to S. is about a geographical mile, cannot be sounded up to. To avoid it one must keep eastward till Understen, or some other known spot, comes in sight, by which the course can be shaped.

All the directions here given are reckoned by well-regulated compasses.

Norway.—Beacon on the Island of Hekkingen, at the Entrance of the Channel leading to the Port of Tromsöe.—On the island of Hekkingen, at the entrance of the Channel leading to Tromsöe through the Malangen fiord, is erected a Day Mark in the form of a Wall, the breadth of which at the base is 24 feet, and at the top 16 feet, and the height 32 feet. The Mark is painted of a light colour, and exhibits its greatest front directly towards the in-sailing, or in a N. W. direction, according to true compass. Longitude 17° 51′ E. of Greenwich, Latitude 69° 36′ N. Height above high water 300 Norwegian feet, and visible 8 to 12 miles.

New Lighthouse on the Punta d' Ostro, (South Point) Entrance of Gulf of Cattaro.—The Lighthouse erected on the Punta d'Ostro (South

Point) at the entrance of the Gulf of Cattaro, in lat. 42° 23′ 28″ N., and long. 18° 31′ 40″ E. of Greenwich, will be lighted during night, from the 21st September, 1854, by an Argand Lamp, shewing a continuous light.

The height of the Light in this tower is 231 feet above the usual tide, and in clear weather can be seen by an observer, placed 12 feet above the level of the sea, from a distance of 22 geographical miles.

Denmark.—Respecting the Lighting of the New Harbour Light at Assens.—The new Harbour Light of Assens will be lighted for the first time October 1st, 1854, half-an-hour after sunset. The Round Iron Tower from which the Light is exhibited is placed on the Northern Mole 46 feet from its outer side, and is painted White; height of the flame over the ordinary level of the sea is 20 feet, and may be seen at a distance of eight English nautical miles.

Denmark.—New Lightship on the Copperground, near Lessoe.—Instead of the temporary Floating Light which, on the 24th September last year, was placed at the Copperground, near Lessoe, a Floating Lightship with three masts, a very effectful Lighting Apparatus on each of these, and a Ball on each top, will, on Wednesday evening, November 1st, be placed near the said ground. The Light on the Foremast and Mizen will be shewn 28 feet, and that on the Mainmast 40 feet above the surface of the sea.

NAUTICAL NOTES.

Loss of Life by Steam-boats in the United States.—A report has recently been made to the Secretary of the Treasury, showing the number of steam-boats destroyed, and the cause of their destruction, during the first half of the present year. It is set forth in the report that no additional legislation is necessary on the part of government to the act passed by "Congress in 1852, to provide for the better security of the lives of passengers on board of vessels propelled in whole or part by steam," except to extend it so as to include ferry-boats and tow-boats propelled by steam. The report states that from January 1 to June 17, 1854, there were 64 steam-boat disasters, involving a loss of 2,294,442 dollars, and 548 lives. Of this number 10 have been caused by collisions, with a loss of 104,000 dollars, and 20 lives. Eight of these were fitted up according to the law of 1852, and two of them not under the law. These cases are all supposed to have been from negligence and inattention. 18 boats have been destroyed by fire, with a loss of 1,480,500 dollars, and 141 lives. These are all supposed to have been accidental except two. Much the larger number of accidents were produced by snags, there having been 23 boats thus lost, with a destruction of property to the amount of 270,000 dollars. The San Francisco was foundered at sea, with a loss of 200

lives, and property to the amount of 300,000 dollars. Of explosions there have been eight. Two of the boats had been inspected according to the law of 1852. The loss of property was 67,500 dollars, and lives 112.

East India and China Ships.—The East India and China Association have just published their usual comparative statement of the number of ships, both British and foreign, with their aggregate tonnage, entered inward and cleared outward with cargo to and from places within the limits of the East India Company's charter, from the 1st of January to the 30th of September, in the years 1853 and 1854. The statistics of vessels entered inward show, in the case of the port of London, an increase of 49 vessels, and 22,051 tonnage, the difference between 580 vessels, with 315,885 tonnage, in 1853; and 629 vessels, with 337,936 tonnage, in 1854. Liverpool exhibits a decrease of 8 vessels, and 6,453 tonnage; the arrivals having been 203 vessels, with 121,975 tonnage, in 1853, against 195 vessels, with 115,522 tonnage, in the latter period. The return for Bristol exhibits an increase of 4 vessels and 2,843 tonnage, the difference between 25 vessels with 9,070 tonnage, and 29 vessels with 11,913 tonnage. In the case of the Clyde, the figures present an increase of 10 vessels and 3,665 tonnage, the arrivals in the former period having been 37 vessels with 13,833 tonnage, and, in the latter, 47 vessels with 17,498 tonnage. The nett increase exhibited by this return is 55 vessels and 22,106 tonnage, the difference between 845 vessels with 460,753 tonnage, and 900 vessels with 482,869 tonnage. The principal arrivals have been from Madras, the Phillippine Islands, Java and Sumatra, and Mauritius. The statistics of vessels cleared outward exhibit in the case of the port of London a decrease of 3 vessels and 22,424 tonnage, the difference between 723 vessels with 360,215 tonnage, and 720 vessels with 337,791 tonnage. The return for Liverpool presents a decrease of 81 vessels, but an increase of 11,175 tonnage, the departures in 1853 being 397 vessels with 213,789 tonnage, and in 1854, 316 vessels with 224,964 tonnage. Bristol figures for a decrease of 14 vessels with 3,382 tonnage, the difference between 25 vessels with 7,060 tonnage, and 11 vessels with 3,678 tonnage. The decrease in the case of the Clyde is 48 vessels, but there has, on the other hand, been an increase of 4,369 tonnage: the departures in 1853 having been 141 vessels with 41,413 tonnage, against 93 vessels with 45,782 tonnage in 1854. The net decrease thus presented is 146 vessels and 10,262 tonnage; the difference between 1,286 vessels with 622,477 tonnage, and 1,140 vessels with 612,215 tonnage. It will be noticed that although in the Liverpool and Clyde returns a decrease is exhibited in the number of ships, the aggregate amount of tonnage has increased—a fact indicating the preference given to large vessels. The principal decrease is in the departures for China, Australia, and the Cape of Good Hope.

OCEAN STEAMERS, (AUSTRALIA.)

The following is a list of steam-ships from England, *via* Cape of Good Hope and Port Phillip, which have arrived in Sydney since August, 1852, with the length of passage of each vessel, including all detentions;—Chusan, 78 days; Australian, 99 days; ditto, second trip, 83 days; Formosa, 75 days; Sydney, 104 days; ditto, second trip, 89 days; Melbourne, 79 days; Great Britain, 91 days; ditto, second trip, 75 days; Cleopatra, 120 days; Sarah Sands, 96 days; Harbinger, 71 days; ditto, second trip, 83 days; Adelaide, 135 days; Hellespont, 82 days; Osmanli, 95 days; Argo, 76 days; Victoria, 70 days; Golden Age, 80 days; City of Sydney, 85 days; Bosphorus, 92 days; Crœsus, 97 days; Queen of the South, 88 days. The shortest passage, including detention, was effected by the Victoria, in 70 days; the longest passage was by the Adelaide, in 135 days; average length of passage, 85 days.

The following steamers, belonging to the Peninsular and Oriental Company, conveying the overland mail from England, *via* Singapore, have arrived in Sydney since December, 1852; making the following passages, including detentions:—Chusan, 39 days, December 10; ditto, 32 days, March 19th, 1853; ditto, 36 days, July 24; ditto, 36 November 22; Shanghai, 35 days, May 24; ditto, 31 days, September 15; Madras, 28 days, January 19th, 1854; ditto, 29 days, May 18. The shortest passage was made by the Madras, in 28 days; the longest passage was made by the Chusan, in 39 days; average length of passage, 33 days; average delivery of English mails, 68 days.

The following steam-ships, with their tonnage and horse-power, are trading from the port of Sydney:—Australian Steam Navigation Company's steamer Waratah, 256 tons, 130-horse power; Yarra Yarra, 376 tons, 200-horse power; City of Sydney, 735 tons, 280-horse power—all trading to Melbourne. Shamrock, 200 tons, 100-horse power; City of Melbourne, 135 tons, 30-horse power—trading to Moreton Bay. Rose, 172 tons, 100-horse power; Thistle, 127 tons, 100-horse power; Tamar, 130 tons, 60-horse power; Collaroy, 201 tons, 120-horse power—trading to Morpeth. Eagle (tug), 138 tons, 80-horse power: total 2,474 tons, 1,200-horse power. Sydney and Melbourne Company:—London, 405 tons, 400-horse power; Hellespont, 332 tons, 80-horse power; Governor-General, 750 tons, 500-horse power—trading to Melbourne. Victoria (tug), 100 tons, 60-horse power: total 1,587 tons, 1,040-horse power. Intercolonial Steam Shipping Company:—Sir John Harvey, 358 tons, 450-horse power; Fettercairn, 143 tons, 30-horse power—to Melbourne and Adelaide. William Denny, 422 tons, 200-horse power, to New Zealand: total 923 tons, 680-horse power. Private vessels:—Ben Bolt, 182 tons, 110-horse power—to Morpeth. William the Fourth, 30-horse power; Illawarra, 203 tons, 100-horse power, to Wollongong. Antelope, 750 tons, 250-horse power—to Melbourne and Adelaide: total, 1,143 tons, 490-horse power. Total tonnage of Colonial sea-going steamers, 6,177 tons; total horse power, 3,410. In addition to the foregoing, there are six steamers plying in the harbour as ferry-boats.

THE CLIPPER SHIPS "RED JACKET" AND "LIGHTNING."

In Nos. III. and IV. of *The Mercantile Marine Magazine* we gave abstracts of the logs of these vessels on their first trip from the United States to Liverpool: we now give an abstract of their performance on their voyage from Liverpool to Australia and home again—the most extraordinary run on record:—

The Red Jacket.—Much interest and curiosity were manifested last May, it will be remembered, as to the relative sailing merits of the clipper ships *Red Jacket* and *Lightning*, and numerous wagers were made by the friends of the respective "crack" ships, that they would go out in less than 70 days. The *Red Jacket* has performed her task admirably, having arrived at her anchorage at Melbourne in 69 days 11 hours and 15 minutes, of which she was under sail only 67 days 13 hours, and we feel assured that the homeward passage would have been made in the same, or even less time, had she not unfortunately fell in with large masses of ice off Cape Horn, which materially interfered with her progress. A brief review of the log of the *Red Jacket* may not prove uninteresting to our nautical readers. She left the Mersey on the 4th May, at 1 p.m., in tow of a steam-tug, which accompanied her as far as the Old Head of Kinsale, when she cast off, and all sail was put on the vessel, the wind being to W.S.W., blowing strong; from the 9th of May to the same time the ensuing month easterly winds generally prevailed, the weather being sultry and calm; on the 10th of June the wind veered round to the southward and westward, fresh breezes, which continued until the 19th, when it again changed to the eastward, with light and moderate weather, which continued until the 25th, when the weather, which had hitherto been very agreeable and fine, became the reverse, the wind being strong from the N.W., with alternate rain, hail, and sleet, the fore part of the ship at one time, on the 29th of June, being covered with ice, and the thermometer at 19°, with very strong gales, and heavy squalls; from the 3rd of July to the 12th, N.N.W. winds were encountered, the ship during that time making wonderful progress, averaging about 350 miles *per diem;* at 10.50 p.m., on the 12th, King's Island was made, and at 10.50 a.m., on the 13th, she crossed the bar in charge of Captain Reed, there being no pilots out, though he obtained one shortly afterwards inside the Heads, and at 12.25 p.m., came to an anchor. From the time the steam-tug left her until noon on the 12th, she ran 1,507 miles, average 150 2-10; during the ensuing ten days, namely, to the 22d, she made 1,619 miles, average 161 9-10; from the 23rd of May to the 5th of June, she accomplished 1,677 miles, average 167 7-10; from the 6th to the 15th of June 1,809 miles, average 180 9-10; from the 16th to the 25th, 2,236 miles, average 223 6-10; from the 26th of June to the 5th of July she ran 2,662 miles, average 266 2-10; and from the 6th until the 12th, 2,285 miles, average 326 3-7 miles. On the 3rd of July she ran 312 miles during the 24 hours; 4th, 300 miles; 5th, 288 miles; 6th 400 miles; 7th, 299 miles; 8th, 350 miles; 9th, 357 miles; 10th, 334 miles; 11th, 245 miles; and, on the 12th, she covered 300 miles; the passage from the Rock

Lighthouse to Port Phillip Heads having occupied the brief space of 69 days, 11 hours, and 15 minutes, sail being on the ship only 67 days 13 hours. The total distance logged was 13,880 miles, which gives an average of 205⅓ miles per day during the whole of the passage. From 17° 45′ E. to Port Phillip Heads, a distance of 5,579 miles, she was only 19 days, 15 hours, giving an average *per diem* of 284¼ miles. The above astonishing passage is, beyond doubt, the speediest ever made between this country and the Antipodes, and exalts the *Red Jacket* to the first place on the list of clipper-ships sailing between this country and Australia. On the homeward trip the *Red Jacket* has again eclipsed every thing, though scarcely equalling her ruu out, which may be easily occounted for in this manner—having lost some time in the ice, and being compelled to shorten sail and heave to, to insure her safety. She weighed anchor at 1 p.m. on the 1st of August, and at 1 45 p.m. was towed from Hobson's Bay by the steamers Washington and Hercules, in charge of a pilot, but came to anchor again at 6 p.m. above the Lightship, where she remained until 6 a.m. on the 2nd, when she again tripped anchor and proceeded; crossed the bar at 10 30 a.m., and discharged steamer and pilot at 11 30 a.m., set all sail, and passed between Curtis Island and Kent's Group; and at 3 30 a.m. on the 3d, was clear of all, with a stiff south-west breeze. From that time until the 17th, she encountered variable weather, with southerly and westerly winds, and hail, snow, and sleet; at 11 a.m. on the 18th saw a large island, about three miles and a half long, high in the centre, and gradually sloping to the east and west ends, covered with snow, and, from its formation and the absence of ice islands, concluded it was land; during the ensuing six days had fresh and steady north-west winds, the ship carrying all sail; on the 24th, at 5 a.m., fell in with a closely-packed field of ice, and, after great difficulty, got through at noon, with considerable damage to stem and copper; at 7 40 p.m. next day she again fell in with the ice, and hove to for daylight, and at 11 a.m. on the 26th cleared it; at 9 p.m. same day, shortened sail, and proceeded under easy canvas, with every indication of ice; at 7 a.m. on the 27th fell in with large masses of broken icebergs, and cleared them at 11 a.m.; at 8 p.m. same day shortened sail for the night, in the course of which and following day passed a large number of icebergs; from that time up to the 15th of September experienced generally fresh winds, ship carrying all sail; from the 16th September the wind was variable, with calms, the ship making very poor progress; on the 22nd the wind improved, and with a N.E. breeze better results were obtained each day; on the 9th instant they fortunately fell in with a cheering stiff N.N.W. breeze, and on the following day the wind continuing, with clear weather, she passed several vessels bound east; on the 13th at 7 a.m., Cape Clear bore N.E. 30 miles, the wind being light and S.W.; at 5 a.m., 15th, passed Holyhead, and took pilot on board off Ormshead at 8 a.m. Her greatest distance run was 376 miles on the 14th of August, with a stiff W.N.W. gale and high sea, and lowest on the 18th of September, when she only logged 31 miles. During the first seven days she ran 1,618 miles, thus averaging 231 1-7th miles *per diem*; second,

2,171 miles, average 310 1-7th; third, 1,783 miles, average 254 5-7ths; fourth, 1,437 miles, average 205 3-7ths; fifth, 1,665 miles, average 237 6-7ths; sixth, 1,569 miles, average 224 1-7th; seventh, 747 miles, average 106 5-7ths; eighth, 998 miles, average 142 4-7ths; ninth, 742 miles, average 106; tenth, 1,342 miles, average 191 5-7ths; and from Friday, Oct. 13th, until her arrival, 791 miles, average 226. The passage from Port Phillip Heads to the Rock Light, a distance of 14,863 miles, was thus made in 73½ days, giving an average of 202¼ miles per day. From the Heads to Cape Horn, 5,572 miles, the run only occupied 21 days, averaging 265¼ miles per day; and from the Heads to this side of the Equator, 10,248 miles, 42 days, an average of 244 miles. The *Red Jacket* circumnavigated the globe in 62 days 22 hours; thus, on June 11, she was in long. 26° 25′ W., and on September 2, at noon, attained the long. of 26° W., having run, by observation, the total distance of 15,991 miles, and averaging fully 10½ knots per hour, or 253 miles per day.

The Lightning.—We have now to record the still more extraordinary performance of the rival clipper, *Lightning*, Forbes, (late of the Marco Polo) commander, belonging to the Black Ball line. This vessel, on her recent passage to Melbourne, was delayed by light and head winds, and, consequently, made a comparatively long run of nearly 78 days; but, on the passage home, Captain Forbes has shown what the *Lightning* is capable of doing under moderately-favourable circumstances, by making the run in the unparalleled short space of 63 days—thus regaining the supremacy which had been snatched from him by Captain Reed. She brings answers to letters taken out by the Great Britain, making the course of post 132 days.

The *Lightning* sailed from Liverpool on the 14th of May, and has made the voyage out and home, including the detention of 20 clear days at her anchors in Hobson's Bay, in 5 months 8 days and 21 hours, mean time, from passing the Rock Light till she was back in the river again; thus performing the voyage in upwards of three days less time than the Red Jacket, notwithstanding that she was at anchor in Hobson's Bay for a period of five days more than that vessel.

The *Lightning* anchored opposite Sandridge, three miles from Melbourne, on the afternoon of the 31st of July, and her mails were delivered (after she had anchored) at the post-office, Melbourne, at half-past five o'clock in the afternoon of that day, which entirely contradicts the report of her having been towed into Hobson's Bay on the following day.

The time occupied by the *Lightning* in making the round voyage to Australia and back, considering her detention in port, is unprecedentedly short, notwithstanding that the outward voyage, from the nature of the winds experienced, occupied longer than might have reasonably been expected from the well-known qualifications of the ship and the ability of her commander. Her run from the Mersey to the equator occupied 25 days, and from the parallel of the Cape to Port Phillip Heads 30 days; indeed, such was the nature of the winds that the topgallantsails never had occasion to be furled during the entire passage, neither was there occasion to reef the topsails. With

the exception of five days, when the ship logged 332, 348, 300, 311, and 329 knots respectively per day, no extraordinary distances were logged. Cape Otway Light was made on the night of the 29th of July, Port Phillip Heads on the 30th, and she cast anchor, as above stated, in Hobson's Bay, on the 31st, her run having occupied 77½ days, mean time.

On the 20th of August, the mails and passengers being embarked, and everything ready for sea, the anchor was hove up, and the *Lightning* was taken in tow by the steamer Washington as far as the Heads, which she passed at 4 p.m., a smart north-west breeze blowing at the time, and by noon of the 21st 268 miles were logged—Swan Island Light, Banks' Straits, having been passed at 11 a.m. On the 24th, at 4 a.m., she passed a large ship, supposed to be the Mermaid, which sailed two days previously for Liverpool; and at 10 p.m. same day, passed the Auckland Islands. Thence to the 28th, when the ship was in lat. 57° 20′ S., long. 164° W., fresh westerly and south-westerly breezes were experienced, and the ship went nobly along, seldom logging less than 14, and frequently 18½ and 19 knots per hour.

At 11 p.m. on the 28th, while under a heavy press of canvas, a violent squall from the south-west caught the ship, and carried away the foretopmast studdingsail boom, the foretop, foretopgallant, and foreroyal yards, and blowing all the sails to pieces, and the ship was obliged to go under easy canvas for the succeeding four days until the yards and sails had been replaced. From the 1st to the 8th of September fine westerly winds were experienced, and the ship averaged close upon 300 miles per day, as per log. On the 8th at 3 a.m., Cape Horn bore north-west, distant 50 miles, being a run of only 19 days mean time from Port Phillip Heads, by far the fastest ever recorded either under canvas or steam. On the 10th, 11th, and 12th, north-east, east, and south-east winds were experienced, and but moderate distances were logged, the ship having to be frequently tacked to make a fairway course. On the 13th and 14th strong south and south-west winds were experienced, and she ran 351 and 354 miles per day respectively. From the 15th to the 20th light and head winds were met with, and only from six to seven knots per hour were averaged. On the 20th she was in lat. 29° 13′ S., long. 31° 40′ W., and thence to Pernambuco, which port was passed at a distance of six miles, on the morning of the 28th, nothing but light north-east and north-north-east winds were experienced.

The equator was crossed at 9 a.m. on the 30th, in long. 34° 30′ W., the ship at the time being only out a little over 40 days mean time from Port Phillip—an extraordinary achievement, considering the adverse winds encountered after rounding Cape Horn. For the first five days after crossing the equator light winds and calms were met with, accompanied by heavy torrents of rain, and the ship made little or no progress. On the 5th Oct., in lat. 10° N., long. 34° W., gentle north-east trade winds were experienced, which continued until the 10th, in lat. 30° N., long. 37° W. On the 11th and 12th she had moderate south-east winds, and at noon of the latter day was in the latitude of St.

Michael's, and long. 30° W., being only 4 months and 29 days out from the time of leaving Liverpool. From the 12th to the 19th the winds were east-north-east and north-east, very light, and during the intervening seven days the ship reached lat. 46° 15′ N., long. 28° W., and at 10 p.m. on the 19th a strong northerly breeze sprung up, which continued until her arrival off the Old Head of Kinsale at 4 a.m. Oct. 21st. At 10 a.m., off Mine Head, signals were exchanged with the Royal Mail steam-ship Arabia, hence for New York; at 3.30 p.m. Tuskar Light was passed; at 8.30 p.m. Holyhead Light was passed; and at 10.30 p.m. the ship was abreast Point Lynas, where she received a pilot. The ship was kept under easy sail during the night, waiting a sufficiency of water to cross the bar, and arrived in the river at 9.30 this morning, Oct. 22nd.

THE WHITE SEA BLOCKADE.

Foreign Office, Downing Street, *Sept.* 28*th*, 1854.

It is hereby notified that, on and from the 12th day of August last, all Russian ports, roads, havens, and creeks, from Cape Swiatoi Nos, in long. 39° 47′ E., lat. 68° 10′ N. to Cape Kanin, in long. 43° 32′ E.,, lat. 68° 39′ 12″ N., including especially the ports of Arkangel and Onega, were placed in a state of strict blockade by a competent force of the allied British and French fleets.

NEW CHARTS.

Published by the Hydrographic Office, Admiralty, in October, 1854. Sold by J. D. Potter, Poultry, and Tower Hill, London; and the principal Chart-sellers; also at the various Custom-Houses of the Kingdom.

	s.	*d.*
North Sea, (sheet 3), from Flamborough Head to Moray Firth, and the Texel to the Naze of Norway. Captains Hewett, Slater, and Washington, R. N. 1853	3	0
Nova Scotia, Halifax Harbour. Captain Bayfield, R. N. 1853 ...	2	6
Malta Island, Valetta to Marsa Scirocco. Captains T. Graves and T. Spratt, R. N. 1854	1	6
Black Sea: Varna Bay, corrected to August, 1854. Capt. T. Spratt, R.N.	0	6
„ Kustenjeh ... ... Ditto, 1854 ...	0	6
„ Danube River, Soulina Mouth ... Ditto, 1854 ...	1	6
„ Plan of the Heights of the Alma River. By Lieutenants Mansel, Wilkinson, and Mr. Brooker, R.N. 23d Sep. 1854	1	0
„ Akmechet Harbour, Russian Survey, 1836	0	6
„ Balaklava Port, Ditto	0	6
„ Bender Erekli Captain T. Spratt, R. N. 1854	0	6
South America: West Coast, (sheets), Nos. 19 and 20. Capt. Kellett, R. N., C. B. 1847–8 ... ... each	1	6
„ Central America, (sheets), Nos. 1, 2 and 3. Captains Kellett and Wood, R. N. 1849 ... ... each	1	6
„ Panama Bay. Capts. Kellett and Wood, R.N. 1847	2	0
„ Buenaventura Port. Do. Do. 1846	2	6

EDWARD DUNSTERVILLE, Master R.N.

To Correspondents.—*It is particularly requested that all Communications be sent to the Editor as early in the month as possible.*

All Communications to be addressed " Editor of the Mercantile Marine Magazine, *care of Mr. W. Foster,* 114, *Fenchurch Street, London.*" *N.B.—The real Name and Address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*

THE

MERCANTILE MARINE MAGAZINE

AND

NAUTICAL RECORD.

DECEMBER, 1854.

BALY STRAIT AND BANJOEWANGIE.

BY CAPTAIN R. B. GILKINSON.

Principally owing to the unsatisfactory and inaccurate description of Baly Strait, as given in "Horsburgh," English ships coming from Sourabaya and bound to Europe or Australia, in the N.W. monsoon, generally pass either through the Strait of Allas or of Lombok, into the Indian Ocean. As a consequence of being so far to leeward, they are sometimes entangled with the N.W. coast of New Holland, before getting the S.E. trades; while the Dutch ships almost invariably pass through Baly Strait, which, although narrow at the entrance, is tolerably safe, and being considerably to windward, vessels using this route obtain the S.E. trades, without falling in with the light winds and strong easterly current which are experienced off the south coast of Lombok.

The following directions for Banjoewangie are in part from Lieut. Smits, of the Dutc' navy, and may be useful to vessels navigating this portion of the Indian Ocean:—

In the north-west monsoon, having rounded Cape Sedano at a moderate distance, steer for the Baly coast, keeping about four or five miles from the Java shore, for the Bank three miles from the Java shore, (and marked on the charts 2 fathoms, doubtful,) is very dangerous; according to the late Mr. Jones, (pilot at Banjoewangie), there are five rocks close together, with 6½ feet of water on one of them, Cape Sedano bearing N. by W., and Gilboan or Duiven Island S. by W. ½ W. There are no known dangers to the eastward of this. Having brought Gilboan to bear W., should the tide be favorable, steer between it and Minjangan (or Herten) Island, keeping rather closer to the latter. On opening the Strait, which at the entrance does not exceed a mile in breadth, great ripplings will probably be experienced, which are apt to alarm persons unacquainted with these parts; but there is no danger, as they are only caused by the tide, which at Full and Change runs at the rate of five or six knots per hour. In a very short time a ship will be swept down the Strait, which soon widens,

and at Banjoewangie affords good anchorage. On October 2nd, 1849, when beating at the entrance of the Strait all day, under double-reefed topsails, with a strong southerly gale, until 5 p.m., on entering the Strait with a favorable tide, I was at Banjoewangie, a distance of eight miles, in less than an hour. However, should night be approaching, or the tide be unfavorable, it will be advisable to lie to at the entrance of the Strait until daylight—there being no anchorage for large ships on the Baly shore. Care must be taken to keep to the eastward of the meridian of Gilboan, or you experience the strong tides which sweep along the Java shore. While outside, there is scarcely any perceptible current, or any bottom with 100 fathoms line.

While in the Strait, should the wind fall light, endeavour to keep the Java shore aboard, as the tides are more regular, aud the shore safe—with several anchorages. The tide, which sets northward, sweeps right on to Gilboan Island, by which several vessels have been carried against the Island (which has 50 fathoms close alongside), and have been severely injured, besides making very narrow escapes. There is very good anchorage midway between Gilboan Island and the Java shore in 18 fathoms, muddy bottom—10 or 12 fathoms when rather nearer the Java shore. About a mile to the southward of this, and abreast of a white sandy beach, (the only sandy part of the coast here), is good anchorage in 10 fathoms, pretty close in. About a mile to the southward we anchored in the cutter *Polka*, in 14 fathoms, off a little bridge, with a line fast to the shore, to the apparent great annoyance of a number of monkeys. Off a conspicuous high tree, about two miles to the northward of Banjoewangie, is a small bay, with good anchorage in 10 fathoms; but, when the wind is light it is difficult for large vessels to fetch it. The Baly shore is not safe, for besides the ripples, detached rocks lie a long way off, and which are not marked, even in the lately-constructed Dutch charts.

Approaching Banjoewangie from the northward, the first danger to be guarded against is the Deptford's Shoal, on which are placed two buoys: "the one on the northern edge is laid in 6 feet at low water, Fort Utrecht flagstaff bearing S. 33° 28′ W., and Point Pakkem (the point to the southward of the Roads) just on with the west foot of Mount Ikan S. 4° W. The buoy near the southern edge has the flagstaff bearing S. 46° 20′ W., and Point Pakkem S. 1° 35′ E. Farther southward lies the De Groots, with 2 fathoms water on it, which is also marked by a buoy, from which the pier at Banjoewangie in one with Fort Utrecht, bears W.N.W. Inside of this lies the Kaiman Rock, also in 2 fathoms." In March, 1850, there were only two buoys, the other having broken adrift some time before, and had not been replaced. To enter the Roads from the northward keep the land immediately to the southward of Point Pakkem in view, and do not approach the shore in less than 15 fathoms before the Fort bears W., nor bring the house on the Pier on with the Fort, on account of De Groots Rock—this will lead to the eastward of all dangers. When the Fort is brought to bear West, steer direct for it until in 12, 10, or 8 fathoms, clear bottom, then bring up. "To avoid the rocks to the southward keep the Pier so as to view it alway from the north side.

The best anchorage is with the Fort bearing W., High Tree N. ¾ E., and Point Pakkem South."

Banjoewangie is an excellent place for water, and is particularly well situated for vessels carrying horses from Australia to India. The water is led with pipes to the end of a wooden jetty, where the boats can lie and the casks be filled at all times of the tide. The whole is under the direction of the harbour-master, and the charges are very trifling. To the southward there is good anchorage all along the Java shore, in about 12 fathoms.

In the S.E. monsoon ships bound from Batavia or Singapore to Baly Strait should work close along the north shore of Java and Madura, taking every advantage of the land and sea breezes (which are there very steady and regular) till off the north-east point of Madura. The best passage to the southward from this is between the Islands of Sapoedie and Giliang of the Dutch—in Horsburgh's charts the former is called Galion and the latter Pondy.* This channel is quite safe, and contains no dangers in the track of ships following Horsburgh's directions. From Sapoedie stand over for the Java shore, and work along it, passing on either side of Meinders Rocks, on which is now placed a Beacon, which at a distance very much resembles a ship under sail. Having reached Cape Sedano steer as previously directed.

* [This must refer to an old chart—on comparing Horsburgh's "Eastern Passages to China," Sheet I., edition 1848, with the Admiralty "Java Island," edition 1848, the discrepancy above-named does not exist, and the positions are tolerably accurate, agreeing also with the Dutch Survey. There are, however, other English charts of these parts (and which are frequently used) not equally correct.—*Ed. Mer. Mar. Mag.*]

CORRECTION OF THE COMPASS IN IRON SHIPS.

I HAVE read with great interest the reports of the discussion on the correction of the compass in iron ships at the late meeting of the British Association—and I regret much that it was out of my power to be present and to take part in the discussion. Perhaps I may be allowed to remedy this omission by the publication of a few remarks on the subject. I am the more anxious to do this, because the circumstance that a distinguished philosopher, (of indisputable competency and impartial character,) has now fairly considered the question, places it in a position totally different from any which it has occupied before. I have deep satisfaction in remarking, that the great principles upon which I founded the method of correcting the compass are entirely recognised by Dr. Scoresby, and even that some minor modifications of those principles (which, as will appear in the remarks below, I had anticipated as probable), have now been established by Dr. Scoresby's beautiful experiments. In the estimation of the actual extent and rapidity of the changes produced by these modifications, I may perhaps differ in some measure from Dr. Scoresby; and I may be disposed to recommend a practical course slightly different from that which he would propose. Still I am happy to find that upon the fundamental points of the theory we are in complete accordance.

I. It may perhaps be advantageous to give a few steps of the history of this subject. The law that the greater part of the disturbance of the compass, produced by an iron ship, depends upon its polar and not upon its induced magnetism (in the ordinary sense of the word induced), was established by me in a paper printed in the *Philosophical Transactions* for 1839. The experiments themselves had been made in 1838. In page 212 I observe—"The most remarkable result, in a scientific view, from the experiments detailed above, is the great intensity of the permanent magnetism of the malleable iron of which the ship is composed. It appears, however, that almost every plate of rolled iron is intensely magnetic." (It is to be noted that I used the term permanent magnetism as equivalent to polar magnetism.) I then allude to experiments on the magnetism of plates of wrought iron; and these experiments were the last with which I had any acquaintance, until I saw some of Dr. Scoresby's beautiful illustrations of the change of magnetism of iron plates. In page 213 I remark—" It seems sufficiently probable that the independent [polar] magnetism of the ship will change with time. This consideration enforces strongly the necessity of periodical examination as suggested above." This is all that was printed by me in reference to the change of the polar magnetism of ships and their occasional examination; but it is not the only instance in which I endeavoured to bring them before the notice of the proper authorities. In 1839, July 20, I submitted a memorial to the Board of Admiralty on the advantage of a supervision, by the Government, of the correction of the compass in iron ships; in which occur the following remarks:—"There is no reason for presuming that the magnetic state of the ship (especially in the case of steam-ships) will remain invariable for many years; and there is reason for supposing that it will vary."—" Experiments of various kinds and in various localities should be made on the same ship, for ascertaining whether there is sensible change in different parts of the earth." And with regard to the magnets:—" The important results, lately arrived at by Mr. Scoresby, and wholly unknown to the persons commercially engaged in the fabrication of magnets, show that attention to those points on which the permanency of the magnetism depends, cannot be expected from common tradesmen." The Admiralty (I believe in accordance with precedent and with the rules of the department) declined to undertake the supervision for commercial ships; and, as no other iron ships then existed, this decision amounted practically to a refusal to enter on the matter. Had the subject been then taken up by the Government, it might, perhaps, have been advanced several years. I did myself endeavour to collect information, and I took notes of the position in which one ship was built; but the occupations of a laborious office compelled me to desist. I may mention, that in almost every instance reported to me, in which the correction failed after a time, I had reason to think that the failure arose from change, not in the ship, but in the correcting magnets; and this consideration, combined with the feeling of want of leisure, prevented the extension of my inquiries.

II. I am deeply struck with the beauty and the importance of

Dr. Scoresby's experiments; and if I bring to notice the circumstance that the polar magnetism of iron plates and the possibility of change in the magnetism, were first strongly insisted on by myself, I trust it will not be understood that I mean to say that those experiments are unessential to our present knowledge of the subject. Still, as the first who examined into and speculated upon this subject, I claim the right of criticising the name which Dr. Scoresby has proposed; and I express my opinon that "retentive" ("retained" would be better in grammatical sense) does not exactly represent the characteristics of the magnetism of wrought-iron plates. The latter appears to me to differ very little from the magnetism of hard steel bars. A steel bar is magnetisd by induction (as is an iron plate)—a steel bar may have its magnetism weakened or reversed: if immersed in the sea water, it would probably lose its magnetism sooner than an iron ship would. But as in practice the magnetism of an iron ship is *slightly* more liable to change than that of a steel magnet *very carefully* preserved, it may be desirable that a name expressive of that idea should be given to it. I would propose to call it the "sub-permanent polar magnetism of wrought-iron."

III. I think it likely that the striking character of Dr. Scoresby's experiments produces an impression of the extent of their applicability to iron ships far greater than is warranted by careful consideration. We may speak poetically of the shocks which a ship receives from the waves; but in reality the plates of iron of which a ship is composed sustain no such shocks. The direct effect of the most violent sea upon them is this: that in the course of two or three seconds of time the plate is plunged five or six feet deeper in the water, and sustains the corresponding hydrostatic pressure. This is very different, indeed, from the raps or slaps in Dr. Scoresby's experiments, in which it is essential that the blow be of the nature of impact, occupying a very small fraction of a second of time. Probably the strain of extension to which the plates are subjected may produce a greater effect: on this, however, experiments are wanting. But even here the change in the state of extension is not sudden, but gradual. The tremor produced by steam-power is more likely to affect the plates in some parts of the ship. It is evident that there are causes in action tending to produce effects like those exhibited in Dr. Scoresby's experiments; and it is equally evident that the action of those causes must be exceedingly slow. On one point, however, I trust that a consideration of Dr. Scoresby's experiments will disabuse many persons who have not been well acquainted with the nature of induction and sub-permanent magnetism. The change to be expected in a ship's sub-permanet magnetism in sailing from England to the Cape of Good Hope does *not* essentially depeud on her passing into another magnetic hemisphere. It *does* depend mainly on this circumstance: that, supposing her to have been built with her head to the north, or in the line of boreal magnetism, she is then turned with her head to the south, or in the line of austral magnetism, and is so kept, exposed to slight tremors, for one or more months. If she had been moored off the coast of Portugal for the same time, in the same position, and exposed to the same

tremors, I apprehend that her magnetism would have undergone nearly the same change (as regards horizontal deviation of the compass) as in the voyage to the Cape of Good Hope.

IV. I think the selection of the loss of the Tayleur as the text for the principal discussion on iron ships, with all its attendant horrors (having no application whatever to the matter under discussion), was unfortunate. When the feelings are excited, the judgment of the speaker, as well as of the hearers, is very liable to be perverted. The question at issue is the very abstract one:—Is it likely that in two days the magnetism of a ship could be so much changed that the compass would be disturbed through an angle of two points? I unhesitatingly answer:—it is not likely; and, speaking with our present knowledge on the subject, it is not possible. I have already stated, that I conceive the causes pointed out by Dr. Scoresby to be wholly inadequate to produce such a rapid change. And I aver that there is no known instance of such a change; and I do not believe that an instance can be produced of a rapid change of one-fourth or one-tenth part of this amount. I believe that information on these matters is not wanting:—a single firm in Liverpool have "corrected" the compasses in several hundred iron ships, and they cannot fail to have received notification of any such changes as those mentioned above.

Before dismissing this subject, I will advert to two sources of error, not essential to my method of correcting the compass, but to which it may be liable if due care is not exercised. The first is, that captains are hardly aware that a very trifling disturbance in the position of the compass (for instance, a change of a quarter of an inch in the height), may very greatly disturb the neutralising influence of the magnets. The second is, that the artists who correct the compasses are too much inclined to place the correcting magnets in the position called "end-on." In this position, the magnet exerts greater deflective power, but it also introduces a force perpendicular to the ship's deck; and this force, when the ship heels, produces an uncorrected horizontal disturbance. While the building in iron was principally confined to paddle steam-ships, this was not important; but now, when so many screw steam-ships and sailing ships are built of iron, this arrangement ought never to be used. I know not whether the compasses of the Tayleur could have been affected by either of these causes.

V. The question, however, which immediately presses is, what (under all circumstances) is it best to do now? In answer, I assert in tbe first place, and I am supported in this by Dr. Scoresby's experiments, that the source of local disturbance and its laws are perfectly well known; that the disturbance can be neutralised by well-known means to the greatest exactness; and that this neutralisation is perfect during change of time and change of place, until the ship herself undergoes an organic change. In the next place, I protest strongly against the system, now in use (I believe) in the Royal Navy, of using a table of errors, and thus constantly making numerical corrections instead of once making a mechanical correction. (1.) It is baffling to the mariner. (2.) It is liable to exactly the same errors, in the event

of a change in the ship's sub-permanent magnetism, as the system of relying on the mechanical correction. (3.) It is liable to errors peculiar to itself, which would be entirely avoided by the use of mechanical correction. In illustration of the last remark, I will refer to the table in page 104 of the late Captain Johnson's book on the '*Deviations of the Compass*,' second edition, a work in many respects highly valuable. Captain Johnson has given the observed deviations of the compass on board three iron steam-vessels in different parts of the world, and I select the last (the Trident) because its deviations were the largest. The deviations in the Thames ranged from 22° 15′ E. to 21° 12′ W. The deviations of the same compass at Malta ranged from 15° 29′ E. to 14° 21′ W. Now the proportion of the terrestrial horizontal magnetic forces in the Thames and at Malta is as 52 to 75 very nearly. Therefore, if the ship's sub-permanent magnetism remained unaltered, the tangents of the angles of deviation in the Thames and at Malta would have been in the proportion of 75 to 52. On computing the Malta deviations from those in the Thames by this proportion, we obtain 15° 50′ and 15° 3′; agreeing with those observed more nearly than observations can be made with a ship's compass. The whole of the deviations, recorded by Captain Johnson for the Bloodhound, the Jackal, and the Trident, at Lisbon, Constantinople, the Piræus, and Malta, can be computed in the same way from those in England, and the results are equally accordant. (The terrestrial horizontal forces on the same scale of proportion are—Lisbon 60, Constantinople 77, Piræus 76). It follows from this that the ship's sub-permanent magnetism in each case was unaltered, and its effect would have been exactly compensated at every locality by a permanent magnet. And thus the captain of the Trident, using Captain Johnson's table, would have had errors of nearly 7°; whereas, if he had used my correcting magnets, he would have had no perceptible error in the whole voyage. I pointed out this result to Captain Johnson; I know not with what effect. (4.) In extreme cases it cannot be used at all; thus, in the Greenland seas the compasses would sometimes turn round with the ship; whereas there are in the Greenland seas several iron ships with my correcting magnets, effecting their purpose (I am informed) successfully. (5.) In cases not so extreme, the inconvenience is intolerable; thus, in one instance which came under my own eyes, the compass changed 100° with a very small motion of the ship; and the directive intensity in one position was only one-tenth of what it was in another position; these inconveniences are entirely remedied by my correcting magnets.

On considering the whole matter, I am led to give the following as my opinion:—For voyages of moderate duration, as, for instance, not further than to the Mediterranean, or to the northern parts of North America, I do not think that any improvement can be made in the existing system, except in details, to which I have alluded. The "end-on" position of the magnets ought to be forbidden; and some attention ought to be given to the ship's sub-permanent magnetism in the direction perpendicular to the deck. For voyages of greater duration, as to the Plata, the Cape of Good Hope, &c., I think it desirable

that means should be provided for enabling the captain to make the small changes which may be required in the correcting magnets. I am confident that I can point out a practical course by which this can be effected; and I am satisfied that, with the sanction of one liberal ship-owner, the aid of one intelligent captain, and the command of one ship for a few days, I can arrange everything with good hope of complete success.

It might, I think, be advantageous that some general supervision should be exercised by the Board of Trade over the correction of the compasses in iron ships; and at no preceding time could reliance be more implicitly placed on the friendly intentions and judicious aid of that Board than at present. It might also be advantageous that the Marine Board of Liverpool should, as a body, interest themselves in the matter. Whatever course may seem best, I shall be happy to give any assistance in my power.

VI. The remarks above are intended by me to apply only to iron-built ships, in which the sensible part of the disturbance of the compass is produced almost entirely by the ship's sub-permanent magnetism. In wood-built ships, in which the induced magnetism is the principal disturbing power, the rules of correction are necessarily different. On these, at present, I have only to make the same general remark which I have made above:—that I disapprove of the use of a table of errors, and that I prefer the use of mechanical corrections: the nature of which, as applicable to the neutralisation of induced magnetism, is perfectly understood.

G. B. Airy.

Royal Observatory, Greenwich, Oct. 17, 1854.

ON THE DEVIATION OF THE COMPASS, AND THE ADVANTAGES TO BE DERIVED FROM ELEVATING THE COMPASSES OF IRON SHIPS.

The compasses of iron ships afford a very extensive field for discussion, so much so, that during the late visit of the British Association to Liverpool, although no subject occupied so great an amount of the sections, embracing four distinct papers, every one appeared convinced that sufficient time was not afforded for the investigation. In order to follow up this important subject, I have separated one branch of the inquiry in order to bring it within the limits of one evening's investigation—I will endeavour to keep within the limits assigned—it is the advantages arising from elevating the compass. Even in confining my observations to this branch of the inquiry, I should have by far too much matter to cope with, except by aid of the discussions of those points which have been recently so ably brought before the public by Dr. Scoresby. In explaining that subject by experiment, let it not be considered that I have formed my opinions on experience thus

acquired. My opinions are formed by observations made in real ships whilst floating on the ocean, and not by models rocking on the table.

Seven years since I directed my attention to this subject, and originated the most simple method of making frequent observation, for the purpose of determining the error of the compass, by which the knowledge of the altitude is dispensed with, and the calculation is reduced to a matter of inspection. This method is published by the Admiralty with due acknowledgment, and has been employed with considerable advantage. From that period to the present, I have been in communication with the commanders of iron ships. I have also directed much attention to the causes of unsteadiness of compasses; and, in 1848, had the charge of the storm compasses of the navy for the purpose of explaining their nature to the Royal Cornwall Polytechnic Society, as recorded in that year's *Transactions*. When I was chosen to fill the office of Examiner of masters and mates, it became my duty to examine all masters respecting their knowledge of the nature of the deviation. The performance of this duty has rendered it a duty, as well as privilege, to make perhaps more extensive inquiries respecting the compasses of iron ships than any other individual. In 1852 I was appointed, in conjunction with Mr. Hartnup, to receive reports concerning all compasses certified at this port by the shipwright surveyors; and in addition to these sources of information, as the Secretary to the Liverpool Local Marine Board, it has been my duty to take down the evidence given in connection with the wreck of ships, respecting which the Local Board have been called on to report. From these sources I have come to a most decided conclusion as far as I am prepared at present to deal with this subject:—

First: That the compasses of all ships, whether built of wood or of iron, are liable to a greater or less degree of deviation; that this deviation is an ever-changing error, and cannot, therefore, be compensated by any unchanging correcting; that a table of errors, magnet corrects, and every other method yet devised, are not, therefore, compensation that will be of any avail, except for a time, or whilst the ship remains under similar circumstances.

Secondly: That this deviation of the compass exists, from obvious reasons, to a greater extent on board of iron ships.

Thirdly: That with proper precautions the compass of an iron ship may be made as worthy of dependence as those ordinarily employed on wooden vessels.

Lastly: That these precautions are not sufficiently adopted at the port of Liverpool.

These are three circumstances which tend to produce a change in the deviation of the compass:—

First: An alteration in the magnetic condition of the ship with regard to that phenomenon denominated by Dr. Scoresby "retentive magnetism," and by others "permanent magnetism."

Secondly: The ship on passing to another latitude changes her inductive magnetism. And,

Thirdly: When the ship heels over, the deviation is liable to change if proper precautions are not adopted.

I shall occupy a very small portion of your time on the consideration of the two first-named causes of change in the magnetic condition of the ship, these subjects having been so fully discussed, of late, by Dr. Scoresby.

I had, previous to the meeting of the British Association, paid but little attention to the changes which arise from what Dr. Scoresby denominated the retentive magnetism. But having since examined my documents, I am convinced of the correctness of his conclusion. It is not iron ships alone that are liable to this change; for I find that in March last, the Niagara experienced one of these changes. She started for the Mediterranean with troops, and it was fortunate for our country that she was commanded by such a cautious and talented man as Captain Leitch. In an unaccountable manner her compasses changed their deviation half a point. This her commander immediately detected by amplitudes and azimuths, and his conduct on that occasion forms a bright example for all commanders to follow. A less cautious man would, perhaps, have aggravated the calamities of war. Many ships have been lost from a compass-error of half a point. The unfortunate Birkenhead was not half a point from her imagined course when she met with her disaster; and half a point of error would put most of our Atlantic steamers on the rocks on which the City of Philadelphia was wrecked, if commanded by captains of less intelligence than Captain Leitch. There were also the Teneriffe and Rattler, iron ships—the latter was affected to the extent of one point; and from the experiments that have been made by Dr. Scoresby on ships now at this port, and from the observations made by Mr. Laird at the Underwriters' Rooms, I have not the least doubt that iron ships are liable to a change in their magnetic condition. With regard to the change which takes place in the magnetic condition of iron ships in passing to the other hemisphere,—I have no hesitation in pronouncing this fact to be established. The Astronomer Royal gives us two examples to prove that this is not the case. He says "it is satisfactory to add that the Ironsides has three times crossed the Atlantic to South America, (approaching the magnetic equator), and that the compass corrected has always been perfectly correct." He mentions also the Rainbow as another proof of this position. Against these two instances, I am prepared with twenty-five instances in which the compasses have undergone changes more or less from this cause. We do not maintain that all compasses of iron ships must necessarily change their deviation when the compass changes its dip; for in the case of the Great Britain, the midship compass has undergone no change, although the other two compasses have deviated three and a-half points. Some of these compasses have been rendered useless by these changes. It will be sufficient to refer to two instances —the Royal Shepherd, and the Panic, ships belonging to this port, and commanded by gentlemen in whom you will place the greatest reliance.

I hold in my hand a letter received from Captain Johnson, who not only holds an Extra Certificate, but as a teacher of navigation whilst residing in Duke-street, Liverpool, prepared as many captains for the examination, for an Extra Certificate, as any teacher at this port. His

evidence is indisputable. He commanded the iron ship Royal Shepherd. His letter is dated Melbourne, August 18th, 1854. He says: "I found an ever-varying error in my compass; and when north of Crozet Island, it was as much as four-and-a-half points out, the magnets being in the same position as when we left England. I got a compass fixed at the fore part of the mizen-mast, 18 feet above the poop deck, which I found to be true magnetic. I then lifted the magnets and replaced them, and succeeded in reducing the greatest error to a quarter of a point, with no error with the ship's head in most directions. Then I found that this error increased as we approached the coast of Australia until we arrived at the Heads, when it was one-and-a-quarter points. I then proved the mast-head compass to be correct." Captain Howard's letter, (late of the Panic), is dated the 17th of October, this year. He says: "I have always found, that as the ship proceeded southward, so did the compass increase its deviation; and in lat. 43° S. it has varied from the truth as much as five points with the ship's head to the eastward or westward; and this has occurred to nearly the same amount in four voyages from England to the northern part of the China seas; and, although the compass was out five points in a high south latitude, it again became gradually correct as we arrived in a high north latitude—showing that as the ship departed from that pole for which the compass was corrected, so did the deviation increase. I also found that the heeling of the ship caused another error of about one-and-a-half points, when the list was great,—so that from the port to the starboard tack a difference of as much as three points had to be allowed. On my first voyage, I took great pains, by numerous observations, to arrange a table of errors, but I found that every four degrees of latitude, or a heel of the ship, threw all my calculations out; so I put a compass in the mizen-crosstrees, which I always found correct; and easily compared my steering compass. On one voyage homeward-bound, the ship was struck by lightning off Cape Clear, which rendered the steering compass useless. I had the binnacle compass taken out, and she was conned up channel by the compass in the mizen-top, in perfect safety, in thick blowing weather. I should advise every one taking command of an iron ship to adopt this easy and sure method of finding the deviation of the steering compass."

I will not contend that all ships have been subjected to this error. It is the case that, under some circumstances, errors compensate one for the other; thus it is, that vertical iron between the compass and the stern, will counteract the influence of vertical iron between the compass and bows—but we cannot predetermine whether the compass will vary, except by a voyage round the world.

The third cause of deviation—that arising from the heeling of the ship—has not been a subject of so much investigation as the other two; and since my inquiries have been carried out to a greater extent than by any other person with whose investigations I am acquainted, I shall detail the laws more minutely than the previous divisions of the subject.

No subject can be more complicated than the change of deviation attendant on the heeling of the ship. Every description (either of form

or arrangement) of iron produces a different effect on the compasses of a ship when heeling over. Fortunately many parts of the iron of a ship compensate each other; but others are of such a heterogeneous nature as to prevent all effectual attempts at compensation. It is true that by heeling over a ship, and swinging her, the evil may be reduced on all practical degrees of list; but if this error remains to any sensible extent, the efficiency of the compass is greatly reduced. The effect of various portions of iron may be divided into six classes, in calculating their effect on the compasses in connection with the ship's heeling.

The first and second may be denominated negative effects, consisting, not in a positive error produced in the compass, but of a reduction of the effect produced by the iron whilst the ship is on a horizontal beam. Thus vertical iron attracts the north end of the compass in north latitudes, causing westerly deviation if situate between the bows and compass—and easterly, if situate between the stern and compass. The heeling, by reducing this effect, is equivalent to a contrary deviation, and when the compasses are compensated by magnets will become a positive error.

The third and fourth sources of error, when heeling, are also antagonistical; when existing to an equal extent they neutralise each other. These consist of short pieces of iron, such as cannon, having their inner ends towards the compass, and iron beams extending from side to side. These, at the four cardinal points of the compass, do not operate, but at the intermediate points, exert their maximum influence.

The fifth consists of iron tanks and other iron in the hold, which exert no influence on the compass whilst on a horizontal beam, but this equilibrium is destroyed as the ship heels over—drawing generally the north end of the compass to windward, and causing the greatest amount of deviation when the ship's head is about north or south.

And lastly, the attraction of the upper part of the iron of a ship's iron sides.

This last-named deviation depends on two circumstances combining in one direction, causing the north end of the needle to be drawn to the lee side. In the first place, the topsides have generally a "tumble home;" and, since iron plates have a greater amount of magnetic influence when situated on the plane of the magnetic meridian, as a ship heels over with her head north, the lee side becomes nearer vertical, and the port side less so, until the lee side corresponds exactly with the plane of the magnetic meridian, at which inclination of the ship this cause of deviation attains its maximum. This also produces a considerable effect on the compass, when the ship heels, if the compass is situated below the level of the iron topsides—that part of the ship being the pole of inductive magnetism when in the plane of the magnetic meridian. When the ship heels, the lee topside is brought nearer to the plane of the compass, and the weather topside is carried further from that plane, the north end of the needle is therefore drawn to the lee side, and the maximum effect is produced when the ship's head is north or south. In this latter respect, the effect of the topsides is antagonistical to tanks, or iron in the hold; but it

differs materially in the maximum effect being attained, when the heel is comparatively small, varying from ten to twenty degrees; whereas, the effect of iron in the hold goes on increasing, till the ship is on her beam ends.

It is to be regretted that we have so little amount of data to establish the laws of the effect of heeling on the compasses of iron ships. Although so much attention has been directed to this subject by the compass committee, under the Admiralty, and by Captain Johnson, only two iron ships have been heeled, to determine this deviation—the Recruit and the Jackal. I have, however, had the opportunity of ascertaining the effect thus produced on board of twelve ships, and they all tend to confirm my conclusions on this subject.

I believe that the chief influence exerted by the iron of a ship to be the result of the iron topsides. In 1844, the St. Vincent, with 120 guns in place, tanks, and stores, was heeled over eight degrees, but no change of importance occurred. Now, on board this ship the first and fifth causes of deviation existed to a considerable extent, without the antagonistical effect of the second and sixth. And in all cases of iron ships which have been observed when heeling, the laws of this deviation have coincided with the result which arises from topsides.

We find, then, that the compass is subject to ever-changing influences, varying with the direction of the head and the heeling of the ship; that the deviations produced are not constant quantities, but change with every latitude. Sir James C. Ross's observations have proved that inductive magnetism requires an amount of time for its perfect development; consequently in the same ship, in the same latitude, with the ship's head directed to the same point, and at the same degree of inclination, the compass will, at different times, exhibit various degrees of deviation. Well might Captain Howard say that he has no confidence in magnet compensation; and well might he give up in despair the task of tabulating such ever-changing errors.

What means shall we then adopt to render the compass, to some extent, an instrument to be relied on? I say, *to some extent*, because we should never teach the mariner to place reliance on his compass when he has the opportunity to check it by the sun, or by the much-neglected lead. The system I advocate is no new system. To elevate a standard compass has been the practice ever since deviation has been understood. The name of a standard compass—what does it imply? That it should be elevated; and yet many of our iron ships have a standard compass in name only. The evil of deviation is incurable in my opinion; the preventive system, therefore, should be adopted. In every case that has come to my knowledge it has been successful, and it has been already adopted on board of many iron ships from this port, through the influence or directions of these intelligent captains. Why is this system not universally adopted? There are those who make silver shrines of this magnetic compensation—who are continually exclaiming full of wrath, "Great is Diana of the Ephesians!" They oppose every obstacle to this, only method of safety, being adopted. You are told that this had been adopted before any scientific matter had

been developed, and is now in use as an excellent auxiliary, but that the extreme motion above will soon destroy its sensibility. I do not deny that it is used—but I complain that any iron ship should be sent out of this port without a standard compass. It is an old proverb that "prevention is better than cure;" but, so far from this principle being recognised by compass-adjusters in this port—misnamed standard compasses are frequently placed in the worst possible position, and then they are said to be cured by their nostrum.

I believe that the Astronomer Royal's system is not properly carried out at this port. I do not believe that Mr. Airy would sanction a compass being compensated by magnets, to be employed as a standard compass, the original error of which amounts to sixty degrees; and yet I believe that the compasses of the Panic and that of the Royal Shepherd, the Seamew, and others, were exposed to an error of more than eight points each way. This is not giving the Astronomer Royal's system a fair trial, as compared with any other system now in use. Let us suppose that a compass, with an original error of eight points, were attempted to be adjusted by means of a table of errors. When the ship's head was west, the needle being drawn eight points to the left, would bring the north point of the card to the lubber line, and when her head is east, the needle being drawn eight points to the right, the compass would show the head still north, so that as the ship moves from west to east by north, the compass would not indicate any change—but if she moved half round by the south, the compass-card would perform a complete revolution from north to north. Thus, we perceive, that no other system will allow of the compass being placed in such a dangerous position.

A very great advantage arises from elevating the compass a comparatively short distance. The whole of that part of deviation arising from the disturbance of the magnetism of the iron topsides is destroyed by raising the compass about one-fifth the ship's breadth above their level; and although, when practicable, I would recommend a greater elevation, yet a great advantage will arise from such an elevation—not only will the deviation be reduced, but this less amount of deviation will be less liable to change. Sudden changes arise rather from an alteration in the position of the magnetic poles of the ship, than from an alteration in the intensity of the magnetic influence. There is a general tendency in the magnetism of a ship to decrease its intensity, but this is a slow process. If we examine the magnetic compensations of the compasses of the Astrologer, Persian, Alps, Arabian, and other ships, we shall find that they have been frequently moved so as to reduce their action. But sudden changes produce a change in the positions of the poles. This was observable on the launch of the Imperatriz, when the poles were found to approach nearer to the plane of the horizon. The experiment which illustrates this fact, shows that when we elevate a compass so as to reduce its magnetism one-half, if the magnetic pole is moved so as to make the compass in its first position double in the elevated standard, it is only increased one-eighth. Suppose, therefore, that the original deviation of the compass of the Tayleur had been reduced to twenty degrees, an amount which never

should be exceeded, the same change in the magnetism of the ship might not have caused a change in the deviation of more than two degrees, (instead of sixty), an error that can lead to no important result.

The principal objection brought forward against the elevation of the standard compass is, that it will cause the compass to oscillate so as to be useless. I admit that the vibration in the tops may sometimes produce an inconvenient degree of oscillation, but there never was a greater error than to suppose, that by keeping the compass low we increase its stability. In order that we may disabuse the minds of nautical men of this error, it will be necessary to investigate the laws of the oscillation of the compass. Oscillation is first produced either by mechanical disturbances, or by the change of the magnetic influence of the ship. These disturbances of the compass may either be constant or they may accumulate. If they be constant no great amount of oscillation will occur; but if accumulation takes place the compass-card may be made to revolve. This tendency to accumulate is greatest when the times of the rolling of the ship, as compared with the oscillation of the compass, is in the ratio of one to one, three, five, seven, or odd numbers; it is minimum when in the ratio of two, four, six, eight, or even numbers. Some time since, being on board of an Irish iron steamer, I remarked to the captain that his compass was very sluggish. He replied it was, but he was afraid he should be obliged to make it more so, for last passage it had oscillated so much that they could scarcely steer by it. I asked him if he had ever stopped the vibration of the card by increasing its weight? He replied, many times, and had always been successful. He took out the card, and I found that he had patched it up with sealing-wax to an extent that can scarcely be imagined. I then inquired of him if he had ever tried the experiment of taking off wax from his card. He could not believe that reducing the weight could produce the same effect as increasing it: but he tried the experiment, and found that I was correct. By our experiment, we see that when the compass is made to vibrate three times to one roll of the model, the card will rotate. This can be prevented either by making the card to vibrate four times to one roll of the ship, the effect produced by increasing the weight of the card, or by making it to vibrate only twice, which effect is produced by lightening the card. The greatest disturbance to which the compass on board of an iron ship is subjected, arises from the change of the magnetic force as she heels over from side to side. Captain Howard informs us that the compass of the Panic deviated one point and a half as she heeled on each side; so, that if she rolled, her compass must alternately be drawn first to one side and then to the other. Our experiment also shows, that since this deviation is destroyed by elevating the compass one-fifth of her breadth above the plane of the iron topsides, so also that is the position at which the compass is most steady. The mechanical effect on the ship's rolling is very small when compared with the disturbance of the magnetic condition, and is a difficulty easily overcome.

In connection with elevating the standard compass, the proper situation should be carefully selected. On some parts of the deck the

deviation is much greater than at others. I have been informed that on board the Himalaya, the compass is so placed as to be free from deviation. This is very probable; and I believe that on board of every iron ship, a place may be found at which there is no deviation. But it is unsafe to place a compass on any part of the ship but on the fore and aft midship line. Here also we can find in all ships a place of no deviation—but not under all circumstances a place which is suitable for placing a compass. No deviation will occur either midway between the two poles, or directly over one of the poles. The former is the best position in which a compass can be placed; the latter the most dangerous. On board the Eliza Harrison, Dr. Scoresby found a place on which the compass exhibited no deviation, but a short distance from this there were thirteen points of deviation. This was over the pole; and if, unwittingly, a compass should be placed in such a situation, the fate of the Tayleur's compasses is all but certain. Then again, the mast, if of iron, should be in its place before the compass is corrected. We ought not to conclude because the mast *per se* is too far distant to affect the compass, that it will not do so on board of an iron ship. I know an instance of the foremast affecting the compass one-and-a-half points, but the mainmast did not increase the deviation. Iron will act either as a magnet by induction of the earth, or it will conduct the magnetism between two bodies, which from position or distance produced no effect on each other, of themselves. We have a piece of iron on the table, too distant to affect the compass; we have a magnet also which occupies a situation in which no effect is produced on the compass, unless the iron is allowed to remain there. Here, then, the combination of two bodies is capable of producing a powerful effect, but neither by itself produces any.

But, it has been said, how can we elevate the compass if all the masts are of iron? Captain Boyd, of the Tubal Cain, finding a variation in his compass on going southward, thought it desirable to fix a compass in his mizentop. But this he found impracticable, on account of the frame and rim being of iron; but he fixed a compass that gave true magnetic bearings on a plank across the boats which were stowed on the poop. A very little precaution would prevent a great amount of anxiety when at sea. Practical men are thus continually discovering, that the only method of preventing these changes in the deviation of their compass, is the expedient we are now enforcing. Let, then, *standard compasses be standard compasses, not in name only, but in reality*, and I am convinced that iron ships may be navigated with as perfect safety as wooden ships.

J. T. Towson.

Liverpool.

CORRECTION OF THE COMPASS IN IRON SHIPS.

THE importance of the Astronomer Royal's remarks on the "Correction of the Compass in Iron Ships" can hardly be over-rated. Inapplicable as such structures may be for actual hostile encounter, their value as transports, as swift despatch boats, and as merchant vessels, is undisputed:—yet that value must depend, in some measure, on the compasses by which they are steered.

All seamen, and the majority of the public, are aware that the magnetic needle is considerably affected by the iron of a ship,—but they do not so generally realize in their minds the fact, that a common steering-compass may be some points in error, owing to the vicinity of iron, and that, if such error be unheeded, the ship, with perhaps a thousand souls on board, may be steering a fatal course, (as in the case of the Birkenhead), while all on board believe there is no cause for unusual watchfulness. To those who have not attended to the subject of magnetism it may be pardonable to observe, that the compass-needle is not only drawn towards the poles by the magnetic influence which affects it under any circumstances, but that the attraction of the iron in the ship is an active agent, drawing the needle more or less from the position it would have, if free from any local influence besides that of ordinary terrestrial magnetism. This special attraction, now generally called deviation, is usually greatest when the ship's head is eastward, or towards the west, and least when nearly in the magnetic meridian. Moreover, it varies as the ship heels, or careens over, because of the varying position and influence of the iron and the varying relative position of the compass-needle which remains horizontal.

Admirable illustrations of these effects have been given frequently by Sir W. Snow Harris, Captain W. Walker, and Dr. Scoresby, besides other well-known authorities.

As some, many indeed, of the iron ships have inconveniently large deviation errors of the compass, it is indispensable to guard against them in some special manner. Her Majesty's ships are "swung"—that is, they are turned round—so that the bearing of an object may be taken with the ship's head successively on the principal points of the compass, and a table of errors formed by which the courses afterwards steered are to be corrected until the ship is swung again or has changed her locality considerably. This method has been followed for many years—for more than a quarter of a century—sanctioned by those who were supposed by the Lords of the Admiralty to be the best judges of the subject, especially Colonel Sabine. So decided has been this view of the question, that the Board of Trade is now issuing recommendations to merchant ships to avoid the other plan,—which shall now be described. This other method is a mechanical correction of the errors caused by the magnetic influence of iron in the ship herself, by means of magnets fixed near the compass. The high authority of the Astronomer Royal is given in favour of this manner of correction by magnets,—and is as decidedly expressed against the custom of Her

Majesty's ships. There is no mistake on this subject. Both views are before the public in print. Both cannot be right. Which are practical seamen to adopt? The sooner the question is settled the better for all whose business is on the great waters, and for the improvement of navigation.

Respecting the process of "swinging" a ship, it may be observed that so much time and minuteness of detail as are now usually given are not necessary. Observations on a few well-chosen points of the compass are sufficient. From them a table or a diagram may be constructed. But the best time for swinging or turning a ship is when she is out of harbour with everything on board. A distant object may then be used as a mark, or transit bearings of known positions observed. While at sea the heavenly bodies, when not obscured, afford means of checking the compasses continually, especially (in this hemisphere) the pole star.

When a distant terrestrial object is visible, the deviation of the compass on any or every point may be quickly obtained by the difference between bearings with the ship in the direction which causes no deviation, and a bearing or bearings with the vessel placed otherwise. This is a simple method, though efficient. Alteration in the ship's local attraction or magnetism may take place from time to time; but, unless iron be moved near the compass, the position in which the ship herself acts on the needle, in the same direction as the general influence of terrestrial magnetism, remains nearly unchanged. A sailing vessel may often try one or two bearings in this manner without much inconvenience. A steamer may do so easily, as well as frequently.

It should never be thought safe to trust implicitly, or for a length of time, to any condition of magnetism. So subtle and variable an influence—subject to sudden or gradual change—whether from jarring blows, from vibration or from electrical action—ought always to be suspected, and therefore watched vigilantly. The Astronomer Royal expresses his opinion, that the sea does not cause such sudden blows as Dr. Scoresby refers to; but he will not be supported by nautical men in such a view. They who have felt the sudden shocks of heavy waves cannot be mistaken on that point.

Correcting Magnets—such as are recommended by Prof. Airy—are found to be very useful in ships employed within moderate limits of latitude, as in the North Atlantic and the Mediterranean; but they are always liable to uncertain change. A flash of lightning may destroy or reverse their polarity; yet the injury may be undiscovered till too late. In using magnets as correctors, it should be borne in mind that, if the ship's deviation is great, very powerful magnets must be employed to counteract it, or those used, if of inferior power, must be placed very near the compass; and then, when the ship heels much, for some time consecutively, the effect on the needle may be very much altered by being brought nearer to the magnet. The Astronomer Royal says, that "a quarter of an inch in the height of the compass may very greatly disturb the neutralizing influence of the magnets." When thus affected, the compass may indicate a bearing or course considerably different from that which it would show were the ship upright. Prof.

Airy approves highly of Dr. Scoresby's experiments; yet their tendency, as stated to a large audience at Liverpool, was certainly to discredit the employment of the Correcting Magnets. In a surveying vessel, employed a quarter of a century ago, a neutral point was the station of the Principal or Standard Compass, at which point there was little or no effect of deviation visible, because there were balanced local attractions abaft, before, and on each side of the compass. The advantages of such a neutral point were suggested by the plan of Prof. Barlow, namely, the correcting plate, used by the lamented Captains Foster and Basil Hall. In all parts of a prolonged voyage round the world the neutrality of that selected point remained unaltered, and its utility was undisputed.

In these remarks I have endeavoured to avoid such technical terms as are not familiar to general readers, and all discussion of abstruse questions relative to induced or other kinds of magnetism. My sole object is to assist in drawing competent attention to a very important subject, immediately affecting life and property at sea.

ROBERT FITZROY.

REPORT ON THE WRECK OF THE AFRICAN MAIL STEAMER, "FORERUNNER."

AN inquiry having been instituted by the Naval Commissioners of the Board of Trade into the circumstances attending the loss of the African mail steamer *Forerunner*, (Capt. Thomas Johnstone) off the coast of Madeira on the 25th October last, and into the question, whether the Master and other officers of that vessel had shown themselves, by reason of incompetency or misconduct, unfit to discharge their duties—Rear-Admiral F. W. Beechey and Capt. W. H. Walker, H.C.S., assisted, according to the Mercantile Marine Act, by Mr. Edward Yardley, the Thames Police-court Magistrate, examined the witnesses, and having heard Capt. Johnstone's defence, presented the following report to the Lords Commissioners of the Committee of the Privy Council for Trade:—

"We are of opinion that the loss of the *Forerunner* was occasioned by her being negligently run upon a well-known rock, situate about 200 yards from the cliff of Fora, forming the eastern extremity of the island of Madeira, the land being at the time distinctly visible, and there being no necessity whatever for the vessel being so near that spot.

"That, previous to this, the vessel was kept unnecessarily, and sometimes dangerously, near to the shore.

"That, by the direction of the master, she was taken out of her direct route, where he had a channel open before him of nearly 10 miles in width, apparently for the purpose of skirting the coast.

"That this unnecessarily close proximity to the rocks was such that Captain Gregory remarked to the captain on the danger of passing

so near; that afterwards the vessel struck and was found to be fast filling with water. The master then quitted his post, and went below to the cabin and occupied himself in saving the chronometers and money of the ship, instead of providing for the safety of his passengers and crew, and endeavouring to maintain the discipline of the ship, which especially became him as captain of the vessel at this, a moment of imminent peril.

"Previous to the occurrence at Madeira it appears, from the evidence, that the vessel under his command struck upon the bar of the Bonny, after he was cautioned by Captain Gregory, a seafaring person, well acquainted with the navigation of the river, that he was going too wide of the buoy moored for the purpose of marking the channel, and that after this, on the 19th of Oct., the *Forerunner* was greatly endangered by being run into shallow water upon the Arguin Bank, the bearing of the route of that vessel being very improperly continued too far to the eastward, and by the soundings not being attended to sufficiently early, by which the position of the vessel would have been known, and this imminent danger been avoided. That after the vessel was reported to him to be in shallow water, he nevertheless continued the course at full speed upon the bank, until she came round in very shallow water and passed over 2½ fathoms of water only, and very narrowly escaped destruction.

"That had it been night instead of day, when the discolouration of the water could not have been observed, the consequences probably would have been the loss of the vessel and the imminent danger of the lives of the passengers.

"Putting these several circumstances together, and considering how frequently he has, by his misconduct, perilled the vessel and the lives of the several persons embarked in her, and being impressed, most forcibly, with his culpable abandonment of his post and of his authority, as captain of the vessel, in the hour of danger and at a moment when the preservation of discipline and order was especially required, we are of opinion that he is, from incompetency, unfit to discharge the duties of a master of any British merchant vessel.

"In coming to this conclusion, we have to state that it has been formed wholly from the evidence which has been brought before us in the case under investigation. But we cannot withhold from your Lordships that that opinion has been strengthened on reading the documents which have been placed in our hands by Mr. Johnstone himself in support of his character. By one of these documents it appears that Mr. Johnstone last year commanded a vessel called the Argentina, belonging to the South American General Steam Navigation Company, and lost her upon a rock between Monte Video and Buenos Ayres; and we find the loss thus accounted for 'by the agent of the company,' while testifying to the zeal and ability of Mr. Johnstone; he says 'that he was at his post' conning the vessel when she struck; but there is no doubt, and no one is more sensible of it than himself, that he was doing wrong in 'shaving' so close to a rocky shore.

"F. W. Beechey.
"W. H. Walker."

Admiral Beechey, at the close of the investigation, (addressing Capt. Johnstone,) said: This report having been delivered to their Lordships, together with the evidence and what you have stated in your defence, their Lordships have been pleased to determine that your certificate shall be cancelled, which has been done accordingly. But, before dismissing this case, I would observe, that the loss of the *Forerunner* has added one more to the list of those distressing occurrences at sea which have, of late, been so frequently attended, in many cases, with lamentable loss of life. I do not stop to inquire into the question of those casualties, whether they have arisen from neglect of lead or compass, or reckless speed, or any acts such as those of which you have been convicted; it is sufficient to observe that if those fatal occurrences continue, they cannot fail to diminish that confidence of the public in steam-vessels, to which they are justly entitled when prudently and properly navigated. This observation, I hope, will go forth through the length and breadth of the land, and the sentence of the court which has been passed upon you will have the intended effect and influence on masters of all British vessels in general, and especially on you, should you be placed ever again in a situation of responsibility in your profession.

WHAT CONSTITUTES A TON?

THERE is nothing, perhaps, which varies so much as the definition "ton," whether for weight or measurement goods. In Great Britain the legal ton by weight is usually 20 cwt., or 2,240 pounds avoirdupois. A ton of flour, in commerce, is 8 sacks, or 10 barrels. A ton of potatoes is 40 bushels. In Cornwall the miners' ton is 21 cwt. of 112 lbs., or 2,352 lbs. In the measurement of a ship the ton is reckoned at 40 cubic feet. The French legal ton for heavy weights contains 1,000 kilogrammes.

At Amsterdam the common ton is 336 Dutch pounds, each pound equal to 1 5-12 lbs. avoirdupois.

The Ton of freight or merchandise varies with the article and the locality from whence shipped. The following are the principal regulations respecting its computation:—

The committee of the Calcutta Chamber of Commerce, in Sept., 1853, came to the following determination:—that for goods paying freight by weight the ton must not exceed 20 cwt. in weight, nor 50 feet in measurement; where an article weighs above 20 cwt. to the 50 feet the ton is reckoned at 20 cwt.; where 20 cwt. measures more than 50 feet, that weight which measures 50 feet shall be deemed to be a ton. No goods shall pay freight by measurement which do not weigh less than 20 cwt. to the 50 feet.

At Ceylon the scale of tonnage is—coffee, in cask, 16 cwt.; ditto in bags, 18 cwt.; cocoa-nut oil, 210 imperial gallons; cinnamon, 800 lbs.; cardamoms, 12 cwt.; pepper, 16 cwt. in robbins, and 18 cwt.

in bags; coir-rope, yarn, and junks, 12 cwt.; horns, 16 cwt.; plumbago and ebony, 20 cwt.; cotton, 5 bales to the ton.

At Madras, for freight, the ton of rice, sugar, saltpetre, wood, and other heavy goods, is 20 cwt.; of seeds and hides, 18 cwt.; of cotton, 5 bales; of indigo and piece goods, 50 cubic feet.

At New Orleans, according to the existing regulations of the Chamber of Commerce, when vessels are chartered or goods shipped by the ton, and no special agreement respecting the proportion of tonnage which each particular article shall be computed at, the following regulations are the standard. That the articles to equal a ton of heavy materials shall in weight be as follows:—

Coffee ...	in casks, 1568 lbs.	in bags, 1830 lbs.
Cocoa ...	„ 1120 lbs.	„ 1300 lbs.
Pimento ...	„ 950 lbs.	„ 1100 lbs.
Flour ...	... ...	8 bbls. of 196 lbs.
Beef, Pork, Tallow, Pickled Fish and Naval Stores ...		6 bbls.
Pig and Bar Iron, Lead, and other Metals or Ore, heavy Dye Woods, Sugar, Rice, Honey, or other heavy articles, gross		2240 lbs.
Ship Bread in casks 672, bags 784, bulk ...		896 lbs.
Wines, Brandy, Spirits, and Liquids generally, reckoning the full capacity of the casks, wine measure ...		200 gals.
Grain, Peas and Beans, in casks		22 bush.
„ „ in bulk		36 bush.
Salt—European		36 bush.
„ West India		31 bush.
Stone Coal		28 bush.
Timber, Planks, Furs, Peltries in bales or boxes, Cotton, Wool, or other measurement goods		40 cubic feet
Dry Hides		1120 lbs.

New York.—Quantity of goods to compose a ton, according to the by-laws of the New York Chamber of Commerce.—Resolved, that when vessels are freighted by the ton, and no special agreement is made between the owner of the vessel and freighter of the goods, respecting the proportion of tonnage which each particular article shall be computed at, the foliowing regulation shall be the standard computation:—

That the articles, the bulk of which shall compose a ton, to equal a ton of heavy materials, shall be in weight as follows:—1,568 lbs. of coffee in casks, 1,830 lbs. in bags; 1,120 lbs. of cocoa in casks, 1,307 lbs. in bags; 952 lbs. pimento in casks, 1,140 in bags; 8 barrels of flour, of 196 lbs. each; 6 barrels of beef, pork, tallow, pickled fish, pitch, tar, and turpentine; 20 cwt. of pig and bar iron, potashes, sugar, logwood, fustic, Nicaragua wood, and all heavy dye woods, rice, honey, copper ore, and all other heavy goods; 16 cwt. of coffee, cocoa, and, dried cod fish, in bulk, and 12 cwt. of dried cod fish in casks of any size; 6 cwt. of ship bread in casks, 7 cwt. in bags, and 8 cwt. in bulk; 200 gallons (wine measure), reckoning the full contents of the casks, of oil, wine, brandy, or any kind of liquors; 22 bushels of grain, peas, or beans, in casks; 36 bushels of grain in bulk; 36 bushels of

European salt; 31 bushels of salt from the West Indies; 29 bushels of sea-coal. 40 feet (cubic measure) of mahogany, square timber, oak plank, pine, and other boards, heavers, furs, peltry, beeswax, cotton, wood, and bale goods of all kinds. 1 hogshead of tobacco, and 10 cwt. of dry hides. 8 cwt. of China raw silk, 10 cwt. net bohea, and 8 cwt. green tea.—*Merchants' Magazine.*

NOTIFICATION OF THE RAISING THE BLOCKADE OF RUSSIAN PORTS IN THE BALTIC.

FOREIGN OFFICE, DOWNING STREET, *Nov. 3rd,* 1854.

IT is hereby notified that the Earl of Clarendon, H. M. P. S. of State for Foreign Affairs, has received from the Lords Commissioners of the Admiralty a copy of a despatch, dated "Duke of Wellington, off Faro Sound, 21st October, 1854," from Vice-Admiral Sir Charles Napier, K.C.B., Commander-in-Chief of H. M. Naval Forces in the Baltic, informing their lordships that he had raised the blockade of the Russian ports undermentioned from that date:—

Islands of Aro, Uto, the Aland Archipelago, Nystad, Bjorneborg, Christianstad, Wasa, Walgrund Islands, Little Carleby, Jacobstad, Great Carleby, Lotto, Kalajoki, Brahestad, Uleaborg, Karle Island, Ijo Gestila, Kemi, and all intermediate Russian ports to Neder Tornia, situated at the head of the Gulf of Bothnia, in lat. (about) 65° 50′ N., long. 24° 15′ E.

THE BLOCKADE OF THE RUSSIAN PORTS.

ADMIRALTY, *Nov. 7th,* 1854.

SIR,—I am directed by my Lords Commissioners of the Admiralty to inform you, that their Lordships have received instructions from the Earl of Clarendon, notifying the intention of the French and English governments, in the event of the continuance of the war with Russia, to institute a strict blockade of the enemy's ports in the White Sea, and in the Baltic, from the earliest period of next spring, when ships of war can resume their stations in that quarter. The blockade will commence immediately on the arrival of the ships at their destination, and will be enforced without exemptions, and with the utmost vigilance.

I have been directed to make this communication to you, that the determination of the French and English governments may be known, and that merchants, and all whom it may concern, having received this early notice, may act accordingly.

It may be important also that it should be known that the French and English admirals in the Black Sea have received orders from their respective governments to extend the blockade of the mouths of the Danube to all the ports in the Black Sea and in the Sea of Azoff which

still remain in possession of the enemy. These orders will be carried into effect with the least possible delay.

I am, Sir, your most obedient servant,

W. A. B. HAMILTON.

To the Secretary, Lloyd's.

[*To the Editor of the Mercantile Marine Magazine.*]

RATES OF CHRONOMETERS.

November 16th, 1854.

SIR,—I am much pleased, as one of the "Professional Raters" of Chronometers, that Mr. Hartnup has, in your last number, laid before the public his Observations on the Compensations of Chronometers, and has called attention to the great variation of their rates under change of temperature. Chronometers are now in the hands of nearly every commander in the merchant service, and much dependence is placed on them—their uniform rates on shore, where they may be subjected to trifling atmospheric change, being a sort of guarantee for their good conduct at sea. Chronometers are still high in price, although generally sold at one-third the price charged in the golden days of chronometer-makers. This reduction in price has not arisen from general inferiority of construction, but from an increased demand, calling forth greater competition. Mr. Hartnup justly remarks, that "numerous patents have been taken out to effect a more perfect compensation," and therefore it is to be presumed some improvements have been made; and a little enquiry into the subject may prompt a more universal application of these patents—for it is well known that, with very rare exceptions, the common compensation is only used. Having frequently been at a loss to account for irregularity in the performance of chronometers at sea, which I have for years rated on shore with satisfaction, I determined to test them in different degrees of temperature, and, at much expense, had an apparatus constructed, by which I could try them from 20° to 120°, and from my own experience can fully confirm Mr. Hartnup's observations on the great alterations of rates of chronometers under this state of trial. That gentleman, when he said "I am not aware of the existence of any other establishment in the world in which captains of merchant ships can obtain any information relative to the variation of the rates of their chronometers in different temperatures," did not know that I had been travelling on the same path with him—and I can only add, in conclusion, that I shall be happy at all times to test captains' chronometers at any degrees of temperature they may require. I believe that great mischief is done to chronometers by their being left too long without cleaning or oiling.—I am, Sir, yours, &c.

JANET TAYLOR.

104, *Minories, London.*

PROPOSED NEW COMPASS FOR SHIPS.

MR. R. J. KEEN, compass manufacturer, of Salthouse Dock, Liverpool, has forwarded to us the following description of what he considers an improvement on the compasses at present in general use on board ship.

In the first place Mr. Keen gives it as his opinion, that the theory of the construction of many compasses made at the present day is very erroneous:—he does not approve of the needles being highly charged with magnetism, and then being placed withiu a bowl made of copper or other metal, in itself magnetic, which he considers as in a measure "destroying, instead of what is usually termed 'soothing' the power of the ueedle, and in its consequences almost as bad as adding weight to the card, thereby increasing the friction, and which is usually supposed to make it work steadier in rough weather."

In describing his improvements connected with ship's compasses, Mr. Keen says,—"As a material for the bowl, porcelain or glass is chosen, both being perfectly non-magnetic; thus the full directive force of the needles is retained.

"The centre of the compass is attached to the card, and acting on a spiral spring, by which the effect of concussion of the centre on the stone (of the cap) is in a great measure, if not entirely, overcome.

"Many springs of different forms have been applied to the support or centre in connection with the bowl; but all these have a tendency to decrease the steady action of the card, as any alteration in the height of the centre must have an injurious effect, by throwing that centre out of the plane of the centres of motion. In my improvement the spiral springs, which have a double action, are attached to the card, and the position or height of the cap or hollow centre remains unchanged.

"The cap is inserted in a disc of vulcanized India-rubber, differing in construction from that at present in use, and totally free from the liability of corrosion by chemical action. This disc is not employed as an elastic medium, but simply to cut off the contact with the bowl.

"The mode of suspension is by a strong cross-bar and arm in the top of the binnacle, whereby a correction is gained for the lateral motion, and the direct contact with the vessel disconnected.

"The method of lighting has long been a source of complaint:—there has either been a deficiency of light, or a superabundance, blinding the man when he looked from the compass. My plan is, a lantern to the fore-part of the binnacle, throwing the light direct through the lubber-line of the bowl—the semi-transparency of the ground glass sheds a soft light through the transparent card, and all oppressive glare is removed.

"This compass has proved perfectly steady under the most severe tests, and when tried with others of the most approved construction, its superiority has been manifest.

"In point of appearance it claims a decided preference, and as a cabin compass, the material (porcelain) admits of any amount of ornamentation, remaining unchanged under all circumstances, and (unless by a violent blow) it is indestructible.

"These are the chief points of recommendation."

CERTIFICATES CANCELLED.

A conviction under the Mercantile Marine Act having been obtained at the Thames Police Court, against Howard Downing Timmins, for desertion from the ship *Christabel*, and he having been sentenced to imprisonment for the same, the Board of Trade have cancelled his certificate of service.

A Naval Court having been held at Pernambuco, in October last, under the provisions of the Mercantile Marine Act, to investigate charges against James J. Peat, master of the ship *Golden Era*, who was accused of having endangered the safety of that vessel, and of her crew and ninety passengers, on her voyage from Port Phillip to the United Kingdom, the said master was found guilty of habitual drunkenness, and gross neglect of duty, and was superseded in the command of that vessel, and the Board of Trade have, accordingly, cancelled his certificate as master.

HONORARY REWARDS.

A medal has been awarded by the Government of Great Britain to Captain David Ellis, of the schooner *Vesta Ellen*, of Boston, for his services in rescuing the officers and crew of the British brig *Eagle*, in March last.

A medal and complimentary certificate has been presented by the French Government to Captain Yeeles, many years master of the *Dantzic* brig, in consideration of Mr. Yeeles' very humane services rendered to the crew of the French ship *La Rose*, in September, 1853.

Boston, (U. S.)—The committee appointed to collect subscriptions for testimonials for the rescuers of the passengers and crew of the ship *Winchester*, of Boston, has made its awards as follows:—To Captain Fitch, of the steam-ship *Washington*, 750 doll. and a gold medal; Mr. King, chief officer of the *Washington*, 500 doll. and a gold medal; Captain Foster, of the ship *Currituck*, 500 doll. and a gold medal: Captain Young, of the ship *Dirigo*, 350 doll. and a gold medal; Captain Ludlow, of the ship *Monmouth*, 250 doll.; to the masters of the brig *Good Intent*, and the British brig *Carolina*, each a gold medal; and to the other officers of the *Washington*, *Currituck*, and *Dirigo*, silver medals and some small sums of money.

LEGAL DECISIONS.

WHITECHAPEL COUNTY COURT.—*Collision with Boat.—The Ship Kaffirland.*—RAINER *v.* STEVENS.—(Before Mr. Serjeant Manning). This was an action of tort, and involved the liabilities of masters of vessels whilst in dock. Mr. Hodgson for the plaintiff, and Mr. Pierce for the defendant.

Mr. Hodgson stated that the plaintiff was a lighterman, and the defendant was part owner and the master of the *Kaffirland*, of Aberdeen, now lying in the London Docks, shipping her cargo for Sydney. In September, the plaintiff's lighter was in the London Docks, and had received on board from the warehouses, goods belonging to Messrs. Vasey, Brothers, of Wapping. The goods consisted of one barrel of Porto Rico sugar, value £8 13s.; 20 lbs. of congou tea, value £2 8s. 6d.; 7 lbs. of gunpowder tea, value £1 2s. 6d; 56 lbs. of coffee, value £1 13s. 8d.; and 2 boxes of raisins, £1 1s.; besides these there were Geneva, bottled wines, and brandy on board the boat. The defendant, whilst endeavouring to get out of the dock, had run out several warps to swing his vessel round, and one of these warps broke at the time the plaintiff's boat was passing under the stern of the *Kaffirland*, and brought the ship into collision with the boat, striking it amidships, and at once sinking the boat and its cargo, which, with the exception of the spirits and wine, were so damaged by the water as to be valueless. Some of the goods were still at the bottom of the dock; but the cases of Geneva, wine, and brandy, after petitioning the Board of Customs, would be allowed to be shipped in their damaged state, at a reduced price to the shipowner. The tea was ordered to be destroyed by the Customs, but the packages were ready to be given up to defendant. Beside these damages, arising out of defendant's negligence in using a rope unfit for the purpose, the boat had been damaged to the extent of £2 10s.; and the incidental expenses charged by the London Docks in raising the boat, and for wharfage, amounted to £2 10s., and the public notary's charge was £1 1s.; in all the damages were laid at £20 19s 8d. A question might arise as to whether the owners of the goods were not the proper parties to have been the plaintiffs. Messrs. Vasey, however, had made the plaintiff liable for the loss of their goods, and had sent in their bill. With regard to the cause of the collision, he should show that the hawser, which broke some two fathoms from the ring, was either decayed, or not of sufficient strength to swing a three-masted ship the size of the *Kaffirland*, and that it was the duty of the defendant, who was in command at the time the rope broke, to see that the tackle was in a fit state. It was fortunate for the defendant the lad in charge of the plaintiff's boat was not drowned.

Michael Gorman said, he was assisting the foreman of the plaintiff, and was alone in the boat at the time of the collision. They were going to take the goods from the London to the West India Docks. He was opposite No. 5 warehouse, and was working the boat by order of Burwood, plaintiff's foreman, towards the tobacco warehouse. The *Kaffirland* was working her way to the jetty, and he tried but failed to get under her bows, and upon getting under her stern, the lanyard line fastened to the quay ring broke, and this jerk caused the rudder to strike the boat he was in amidships, and to sink it, and most of the goods. He jumped into a barge and thus saved his life. He could not see the hawser break, for the ship was very high and light. A man named Bourne jumped into a boat and picked up what things were floating in the dock. He was rowing in a proper direction.

By Mr. Pierce:—Is thirteen years of age. Gets his living by jobbing about for different watermen. Has done this for twelve months. Never took charge of a boat entirely. Is always knocking about in boats. Was pulling the boat with two sculls in the rowlocks. There was plenty of room for one scull until the line broke. The *Kaffirland* was quite across the dock, and pointing to the East Quay. Did not see the head lines out at the ship, she was too high. There were other lighters about.

By the Judge: Never rowed a boat about the docks before by himself.

Henry Bourne said, he was a mariner, and had been in the docks five years, and was on board the Eliza Shairpe, the fourth ship off the *Kaffirland*, at the time the lanyard broke. He saw the boy on a lighter crying, and some of the boat's cargo floating about, which he picked up. He saw the rope after it was

broke. It was a lanyard rope, and sufficiently strong for its purpose, if it had been a new one. Saw about a fathom of it. Should say the boy was tall and big enough to haul a boat out of the way of a ship.

Robert Burwood said, he was foreman to the plaintiff, and that the boat in question was his own. The boy was quite capable of conducting the boat. He saw the *Kaffirland* was quite athwart the dock. He went on board the *Kaffirland*, and saw the master and mate, and pointed out the damage. The defendant merely said, "He wanted to know whether he had a right to get out of the way or witness." If the line had not broke there was plenty of room for the boat to get by. The plaintiff is too ill to leave home, but he (witness) knew Messrs. Vasey had made a demand upon Mr. Rainer for the value of their goods.

By Mr. Pierce: When he first saw the disaster, the stern of the *Kaffirland* was quite in, and she was swinging with ropes out. Went on board within five minutes of the collision.

Mr. Pierce submitted that no case had been proved or made out. It was quite clear that no injury had been done to Rainer. The boat sunk belonged to Burwood, and the goods to Messrs. Vasey. No evidence had been given as to the value of these goods, and no proof of contract between Rainer and Vasey. Again, as to negligence, no evidence had been given as to his client committing any. True, the rope broke, but the negligence was on the other side in giving charge of a skiff to a mere child in a place beset with difficulties and dangers.

The Judge: I am against you at present. I consider that sufficient proof has been adduced to show that the plaintiff has sustained damages. As to the rope breaking, it is quite immaterial whether it was new, old, or thick. You admit it broke. They say its breaking caused the accident. You must show it did not do so.

Mr. Pierce: My defence now is, sir, a mere explanation. The *Kaffirland* was going from the tobacco dock to the jetty, to load. The defendant was under the orders of the Dock Superintendent, and was obliged to act up to his orders. Captains, it may be said, are superseded in navigating their vessels whilst in dock, and are as much under command as the crew under them are at sea. The defendant was ordered to go out stern foremost, and to get into the middle of the stream. In doing so his ship had no less than five ropes out to swing her round. The docks were very much crowded, and it was a difficult matter to get the ship round. The stern-rope broke in swinging her, but we deny that the breaking of this rope had anything to do with the accident. The defendant did not see the accident. He was standing aft on the quarter-deck, giving orders to the crew, who were forward. The rope breaking caused the *Kaffirland* to go forward, and to get into trouble with the Gipsy Queen by breaking her bowsprit; and this showed that the breaking of the rope did not cause her to come backwards upon the boat. As to the rope not being suitable, we say it was.

The Judge: If the defendant applies a rope, new or old, and it is not adequate, he is liable for negligence. If the rope breaks, the presumption is that it is not adequate; but if you show that the rope was struck by lightning, or any visitation of God, the defendant would not be liable for any mischief arising out of such breaking.

Mr. Pierce: If we find ropes suitable for their purpose, and they break, I contend we are not liable. The defendant has done his duty by supplying the usual sound gear, which I shall show we have done. Is the accident attributable to the defendant, or to plaintiff's servants? I say it was caused by Burwood's absence. If he, a competent person, had been in the boat, he would never have gone round by the stern of the *Kaffirland*, but would have waited until he could get under her bows. He could have backed out when he saw the accident to the rope; but the boy was frightened when he saw the ship coming round, and never thought of pulling his boat back. It was dangerous to let such boys pull boats about the docks; they not only imperilled their own lives, but placed captains in very awkward predicaments. We say, first, that we are not liable, inasmuch as we were obliged to navigate our ship under the direction of the dock authorities; secondly, that the breaking of the rope did not cause the accident to the boat; and thirdly, that the accident was contributed to by the plaintiff's servants.

Mr. Pierce having urged upon the court the importance which a verdict

against the defendant would be to all captains of ships in the docks, called the defendant, who said he was master and part owner of the *Kaffirland*, of Aberdeen, bound for Sydney. On the 27th September he received orders from the Dock Company to go from the tobacco dock to the jetty. He was to proceed up the dock, and when he got his ship in a proper place he was to turn her, and go stern foremost. His ship measures 155 feet, and is of 836 tons burthen. He had five ropes in different directions to turn her round, and he was on the after part of her. He heard of the accident while he was on the quarter-deck from a master of a ship near to them, and saw the things floating about. The ship had been steady some time before the line broke, but had been heaving astern to get clear of the Gipsy Queen. The rope was good for working in the dock, and broke after the master of the Jessie directed his attention to the accident to the boat. He had eleven men on board altogether, and the usual number of men were heaving at the capstan. He wanted to get a few feet astern, to clear his bowsprit. It was not a new rope, but 4½ inches in circumference, sufficient for the purpose. Burwood came on board half an hour after the accident, and said it had arisen through the stern-rope breaking. He replied, that it could not be from that, as the breaking of the rope would make her go ahead instead of coming astern. Burwood said it was a good job the boy was not drowned, and left the ship. He was keeping a proper look-out, and his mate was forward.

By Mr. Hodgson: A ship of 836 tons does not require a very strong rope for working in docks. His ship was encumbered with barges. The rope had been in use two years, but was seldom used. It was impossible that the accident could occur through the rope breaking. He imputed the blame to the boy for putting his boat there, without room. The fact was, the boy squeezed in, and broke the boat amidships, and it showed he had no business there. Did not know if the rudder broke the boat.

Mr. Bruce, the mate of the *Kaffirland*, confirmed the defendant's statement.

Captain Gibbons said: He was assistant dockmaster, and superintendent of the London Docks. It was his duty to order the ships to their stations. He gave directions to his men to order the *Kaffirland* out of the jetty, and for her to go up stern foremost. He was not present at the accident. It would depend upon the wind, which way the ship would go when the rope broke. But from the plan now produced, when the rope broke the ship would go ahead. Considers the boy old enough and big enough to take charge of a boat, and if he saw a vessel of 1,000 tons turning, it would be his duty to look out, and not the ship's.

By Mr. Hodgson: Should say a lanyard rope would be sufficient for the purpose now applied. If the stern-rope broke she would go ahead, and not come astern. From the appearance of the sketch put in by the defendant, there was not room for the boat to pass the ship.

By the Judge: He considers the cause of the accident to be the endeavouring to put the boat through when there was not room. If the boy could have used both sculls there was time for him to get out of the way. According to his view of the case, the breaking of the stern-rope could have had no effect upon a boat passing westward of the *Kaffirland*.

Mr. Hodgson having replied,—

The learned Judge said: Although the defendant was bound in law to have a rope sufficient for its purpose, and which the rope in question was clearly not, the evidence went to show that the accident did not arise from the defective rope. He could only come to the conclusion that the accident arose from the *Kaffirland* moving in its regular course by direction of the dock authorities. It was the duty of the person in the boat to see he was not getting into danger. The plaintiff failed to show that the accident arose from defendant's negligence by using a weak rope. He must, therefore, nonsuit the plaintiff, but should not allow defendant's costs.

Mr. Pierce urged that his client was fairly entitled to his costs, and that it would be an injustice to refuse them. The defendant had better have paid the demand at once, and the effect of refusing the defendant's costs would be to deter captains from defending any future action, however wrongly brought.

The Judge: Well, under the circumstances, I am afraid the plaintiff must pay the defendant's costs.—Judgment for defendant, with costs, accordingly.

THAMES POLICE OFFICE.—*Combination of Seamen in Australia.*—John Reed, John David, Thomas Denne, Frederick Auburn, and William Robertson, seamen, belonging to the ship *Hooghly*, were brought before Mr. Yardley, charged with unlawfully refusing to proceed to sea in the ship on board which they had engaged to serve.

Mr. F. Pelham conducted the prosecution, and said the conduct of the prisoners had been attended with immense loss and inconvenience to the owners and captain; and, if the serious offence with which they stood charged was to go unpunished, the commerce of the country would be destroyed, and the seamen would be the first to suffer.

From the evidence of Captain William Eastham, the commander of the *Hooghly*, it appeared that the prisoners signed the ship's articles in the port of London on a voyage which was expressed as follows:—From London to Portland Bay, and any other port or ports in Australia, or the Indian or China Seas, the Southern, South Atlantic, or Pacific Oceans, North or South America, West Indies, or to any port or ports to the eastward or westward of the Cape of Good Hope, for a period not to exceed three years, and back to a final port of destination in the United Kingdom or continent of Europe, between the Elbe and Brest." The seamen shipped for £3 10s. per month. On the arrival of the ship in Portland Bay, Australia, a spirit of insubordination was manifest among the crew; and, on the 20th of March, George Spon, William Hawkes, George Smith, and Charles Hudson, were taken out of the ship by the police, for general misconduct, and endeavouring to incite the remainder of the crew to disobedience of orders, and refusing to do their duty on the high seas. On the same day, William Robertson, Thomas Denne, John David, John Reed, and John Irving, seamen, refused to do any more duty on board the ship. On the following day, the last five-named men distinctly refused to do any duty on board the ship, and said they would suffer imprisonment before they would do another hand's turn. They were landed, and given in charge to the police. On the 23rd of March, Robertson, Denne, David, Reed, and Irving, were taken before the colonial magistrates, and sentenced to four months' imprisonment for refusal of duty. Spon, Hawkes, Smith, and Hudson, were sentenced to two months' imprisonment, and ordered to return to the ship when required. On the 3rd of July, in consequence of an application to the authorities by the captain, Robertson, David, Reed, Irving, and Denne were liberated from gaol, and sent on board ship, which was then ready for sea, and their services being required to enable the vessel to proceed on her voyage to England. On the five men being ordered to return to their work, they positively refused, stating that they had taken three months' imprisonment, and swearing they could put up with cabin accommodation on the passage home. The captain immediately put them under restraint, and confined them in one of the port-cabins of the cuddy, and locked them up. On the 4th of July the prisoners refused to unmoor the ship and proceed to sea, unless the captain paid them the sum of £40 each, before heaving the anchor. The captain not being able to get the ship away, and then being in an open bay, in the winter season, where the vessel was in jeoparday every day of going on shore, and becoming a wreck, actually complied with the extortionate demands of the prisoners, and paid them £40 each. On the 5th of July the seamen got the ship under way, and she proceeded on her voyage.

In cross-examination by Mr. Smith, who appeared for the prisoners, Captain Eastham said, the prisoners gave him a receipt for the money he paid them. It was merely a statement that they received £40 for a passage from Portland Bay to London. The wages of the seamen would not have amounted to £40 on the termination of the voyage, at the rate of £3 10s. per month, for they had advances in London, and the time they were in prison would have to be deducted from their pay. There were also the commitment and gaol fees to be deducted. On the arrival of the ship in the London Docks, the prisoners were immediately given into custody.—In answer to questions by Mr. Yardley, Captain Eastham said, the prisoners did not behave well on the homeward voyage. On the 17th of September the prisoners refused duty; and, on being told to repair and square rattlings, they all came aft and said they would do no more duty till the victuals were cooked for them. He was obliged to tack about ship;

and, from eight in the morning till five in the afternoon, the officers, boys, and himself were doing the men's work. The captain then read an entry in the official log-book confirming his statement.

Mr. Yardley said, the offence came within the meaning of the fifth division of the 78th section of the Mercantile Marine Act, 1850, which stated "that the punishment for combining with any other or others of the crew to disobey lawful commands, or to neglect duty, or to impede the navigation of the ship or the progress of the voyage, should be punished with twelve weeks' imprisonment, with or without hard labour."

Mr. Smith argued that the prisoners had committed an offence in Australia, —were punished, but were wrongfully taken out of the custody of the law, and that the original contract having been rescinded by their misconduct, they could claim no wages under it, and had a right to enter into a fresh agreement.

Mr. Yardley said, the *gravamen* of this offence was combination, and it was to counteract such offences as these that the act of parliament was passed, and the only question was, whether it was strong enough to suppress the evil. The seamen well knew the voyage was entirely dependent on their going to sea in the ship. They all came up to the captain one after the other, indeed, almost simultaneously, and made the same proposal, and forced upon the captain the most exorbitant demands. The subsequent conduct of the prisoners, when they were off duty the greater part of the day, any stronger proof of combination could not be. The prisoners, and all persons in their situation, would be taught that the English law was powerful enough to reach them even in Australia, or wherever the British flag was flying. He should now pass a severe sentence, as an example to others, and he hoped it would be made known, and held up as an example to seamen, that they could not set aside solemn contracts entered into in this country without incurring the penalties of the law. He sentenced the prisoners to be imprisoned for twelve weeks in the House of Correction and kept to hard labour.

Inspector Bolas said he had taken from the prisoners £149 in sovereigns, part of the money they exacted from the captain in Portland Bay.

Mr. Yardley: I can make no order on the subject.—A written notice was then served on the inspector by the solicitor of the owner of the *Hooghly*, not to part with the money to the prisoners.

DEFICIENCY OF CARGO.—*Mates' Liability.—The Donna Anna.*—Mr. George Walker, the owner of the *Donna Anna*, appeared before Mr. Ingham to answer a claim for wages made by Mr. Richard Litton, chief mate of the vessel, who sued far a balance of £17 for services on a voyage from Teignmouth to the West Indies and London.

A gentleman from the office of Messrs. Ellis & Co., who appeared for the complainant, said his client shipped for £6 per month, and he understood that payment of the wages was resisted on the ground that eight puncheons of rum were missing. He submitted that the owner could not claim a set-off on a loss of that kind, against a demand for wages, and there was nothing in the Mercantile Marine Act, or the General Merchant Seamen's Act to justify such a proceeding. In the first instance the owner must prove a loss, which could not be done.

Mr. Ingham: It must first be shown by whom the bill of lading was signed, and whether it was upon an account rendered by the mate, and the loss must be proved.

The complanant proved he shipped as mate at £6 per month on the 24th of April, and left the ship on the 24th of October.—In cross examination by Mr. Hill, the defendant's solicitor, the complainant said: I took in 313 hogsheads of sugar in Jamaica. I kept an account in the cargo-book. That book (Mr. Hill was holding it up) belongs to me. I entered the deliveries of sugars and rums in the log-book. The cargo of rum did not turn out so much as I entered, but the receipts I gave in Falmouth, Jamaica, will show the exact quantity I received.

Mr. Hill was afraid he must ask for an adjournment, as he had not the captain in attendance, or the persons belonging to the dock where the cargo was discharged, and who would prove the number of puncheons of rum delivered. His case was, that the cargo had turned out deficient to the extent of six, not eight puncheons of rum.

Mr. Ingham said he would proceed with the case, and ascertain if there was any necessity for a postponement.

Mr. Hill then questioned the complainant as to the number of puncheons of rum entered as received on particular days, from which it appeared that between the 4th and 16th of July 69 puncheons of rum were received.

Mr. Ingham said there was no occasion to go into the recipts on each day; the total amount received on board was all he required. He asked for the captain.

Mr. Hill: Unfortunately, we cannot get at the captain; he is at Swansea.

Complainant said: The captain signed a bill of lading on the 11th of July, on the entries in the cargo-book, which were in his (complainant's) handwriting. He entered 95 puncheons of rum, and the number, when the cargo was discharged, was only 89. The other six could never have been received on board. He attributed the mistake to some of the puncheons and their numbers being twice entered in the cargo-book. Nine puncheons were unshipped from the *Donna Anna*, and conveyed to the *Canada*, loading for the same merchant.

Mr. Ingham: How was that?—Complainant: We had no room for them. There were five barrels of ginger and one hogshead of sugar in excess, not entered in the cargo-book, and that made up the exact number of packages.

Mr. Ingham: Did you enter hogsheads of sugar and barrels of ginger for puncheons of rum?—Complainant; I might, in the confusion. I had a good deal to attend to. The second mate was laid up, and three men were in the hospital, while I was taking in cargo. The *Donna Anna* was a new ship, and we had rigging to put up.

Mr. Ingham: It was your duty to take in cargo?—Complainant: Yes, sir.

Mr. Ingham: Were the barrels of ginger and the hogsheads of sugar the same size as the puncheons of rum?—Complainant: No, sir; the hogshead was larger, and the barrels smaller, than the puncheons of rum.

Mr. Hill: The hogshead of sugar and the five barrels of ginger have nothing to do with this matter. Bills of lading are signed for 95 puncheons of rum, and the cargo turns out to be 89 only, and the owner is called upon to make good the deficiency.

The complainant, in answer to his solicitor, said he had been a mate for four years, and had never fallen into an error of this kind before. On the receipt of the mate, and on the production of the cargo-book, the captain signed the bills of lading.

The complainant's solicitor said his client was clearly entitled to his wages, and if the owners of the ship had sustained any loss by his negligence—which he did not admit—they could bring their action.

Mr. Ingham was of opinion that he could entertain the objection. He had heard a great many cases of this kind, and had always held that if a mate's cargo-book led the captain into a mistake, and to sign for more cargo than was received, the mate was liable. One of the parties must pay—either the captain or the mate. In this case, as far as he could see, the captain is not to blame, and had acted on the representations of the complainant. He inquired the amount of the loss.—Mr. Hill: It is upwards of £100. The balance due to the complainant will go a very little way towards making up the deficiency.

Complainant: But the missing puncheons were never on board ship.—Mr. Hill: You entered them in the cargo-book.

Complainant: Nine puncheons were taken from our deck to the *Canada* because we had no room for them.—Mr. Ingham did not think that had any bearing on the case at all.

The complainant's solicitor: We hope the six puncheons of rum will turn up. There is no doubt the merchant or shipper at Jamaica has already found out the mistake, and will not ask for payment.—Mr. Hill: But we are called upon for payment by the merchant here.

Mr. Ingham: If the six puncheons of rum turn up, the owner of the ship will pay the complainant as a matter of course.—The complainant's solicitor: My client is a poor man, and cannot wait till we have advices from Jamaica. He wants money, and he wants to go to sea.

Mr. Hill: We have a claim of £100 and upwards made upon us, which we shall have to pay immediately.—The complainant's solicitor: I must urge this

upon the attention of the court. The complainant had multifarious duties to perform—the ship was short handed, and it is not imputed to him that he was guilty of any negligence. He certainly has fallen into a mistake, but no actual loss has been proven. The six casks of rum were never received on board; that is quite clear. Therefore I contend the remedy must be by action against the mate, and the owner cannot, on this summons, claim a set-off.

Mr. Ingham said: He had jurisdiction to go into the whole question. The contract entered into by the complainant specified that in consideration of performing certain duties he should be paid £6 per month: and the contract also expressed, that "in consideration of services to be duly, honestly, carefully, and faithfully performed, the said master doth hereby agree to pay," &c. The 15th clause of the Merchant Seamen's Act gave him an equitable jurisdiction. The justice was to make such order as would appear to him reasonable and just. The objection to the payment of wages was, that the complainant had not been careful, and that so far from being careful, he had incurred a loss to the owners of the ship of £100 and upwards. He was of opinion he could make no order in this case.

The complainant's solicitor: My client had a double duty to perform.—Mr. Ingham: Then he should have said to the captain he could not attend to the taking in of the cargo and the other business of the ship; but when he thinks proper to allow the captain to sign on the faith of the cargo-book, he must be held reponsible for all the consequences. I can make no order, and the summons is dismissed. If the mistake was cleared up, the complainant would obtain his wages.

Mr. Hill: With costs, sir?—Mr. Ingham: No; I don't think it would appear reasonable and just in this case to order costs.

The complainant's solicitor: Then, if the six puncheons of rum turn up, we are to have the wages?—Mr. Ingham: Certainly.

The magistrate then gave directions to the clerk to make this entry in the minute-book—"Summons dismissed, but if the six puncheons of rum turn up, the complainant to be paid his wages."

CONDENSED LIST OF

CHANGES IN LIGHTS, BUOYS, &c.,

ISSUED BY THE ADMIRALTY, TRINITY HOUSE, AND FOREIGN GOVERNMENTS.

Notice to Mariners, from October 29 *to November* 29, 1854.

Portsmouth.—Light on Southsea Castle.—The Light on Southsea Castle having been raised 20 feet, on November 7th, 1854, and thenceforth, it will be displayed at an elevation of 51 feet above the level of High Water: it will show a Green Light to the westward, and a Red Light to the eastward, as-before; no alteration in these particulars has been made; the bearing of the line of division between them being about N.E. by N. and S.W. by S., or in the direction nearly of the Spit Buoy.

Bristol Channel.—Usk Lighthouse.—On and after the 27th Nov., 1854, a Red Light will be exhibited from the Usk Lighthouse to mark the Entrance of the River, between the Black and White Buoys.

Navigation of the Bristol Channel.—The Lavernock (Mast) Buoy, (now coloured Red) has been moved and placed on the S.S.W. part of

Ranie Spit, in 3½ fathoms at low water spring tides, and with the following marks and compass bearings, viz.:—

Brent Knoll, midway between Bream Down and Flatholm Island.	
Flatholm Lighthouse	S. by E.
Sully Island	West.
Pennarth Head	N. by E. ½ E.

Pan Sand, Queen's Channel.—A White Buoy, marked "Pan Sand," has been laid in 3 fathoms at low water spring tides, about four cables' length S.E. by E. from the Wreck of the Pan Sand Beacon; and with the following marks and compass bearings, viz.:—

North Down Tower, midway between Reading Street Beacon and Margate Pier Lighthouse	S.E. ¾ S.
Birchington West Mill, midway between Minster West Mill, and a conspicuous Tree, West of the last-named Mill	S. by E. ¼ E.

Coast of Portugal.—Light on the Cies Islands.—The new Lighthouse erected on the summit of Mount Faro, that being the most prominent point on the extreme South of the centre Island, will be lit up every night from sunset to sunrise, commencing with that of the 19th of November, 1854. The Lighthouse is situated in lat. 42° 12′ 23″ N., long. 8° 53′ 7″ W. of Greenwich. *Eclipses from minute to minute.* The Light is raised 650 Burgos feet above the level of the sea.

Gibraltar.—Danger Buoy.—Caution when approaching the New Mole.—The new Mole at Gibraltar is in progress of extension to the northward, and a Red Beacon Buoy has been laid down about a cable's length off the Mole Head, in order to mark the limits of the advancing work under water: it is highly dangerous for any vessel to pass between that Buoy and the Mole Head.

Black Sea.—Light on Cape Khersonese, Crimea.—The Commander-in-Chief in the Black Sea has officially notified to the Admiralty, that the Light on Cape Khersonese, in the Crimea, near the entrance of the Harbour of Sebastopol, which had been discontinued for some time, was again lighted on the 3rd October.

Norway.—New Light on Egeröen, in the Vicinity of Egersund.—On November 16th, 1854, a Light will be shown for the first time on the N.W. point of Egeröen, in the vicinity of Egersund, visible from all points of the compass towards the sea: with a view to its serving as a Day mark or Beacon, the tower will be painted Red. Latitude 58° 24′ 45″ N., long. 5° 48′ 15″ E. of Greenwich: elevation of Light above the sea 152 feet; elevation above the ground 92 feet; visible 20 to 24 nautical miles.

Mobile Bay, U. S.—The following Buoys, Beacons, &c., have been placed to facilitate the entrance to Mobile Bay:—

A Bell Boat, striped black and white, is anchored in 8 fathoms

water, half a mile outside the outer Bar: Sand Island Light bearing N.W. by N. ½ N., 2½ statute miles distant. The Bell is tolled by the action of the waves.

An Iron Buoy, striped black and white, is placed in mid channel, just within the Bar, ranging with the Bell Boat and Sand Island Light.

A Black Iron Buoy on the West side of the main channel, near the North end of the " Sand Island Bank."

A Red Iron Buoy on the East side of the channel, at the edge of the " East Bank," and opposite the Black Buoy just mentioned.

A Black Iron Buoy on the West side of the channel, at the edge of the " West Bank," and opposite Fort Morgan.

An Iron Buoy, striped black and white, in mid channel, between Mobile Point and the " Middle-ground."

A Red Iron Buoy on the East side of the main channel, at the West end of the " Middle-ground."

In entering the Harbour, Red Bouys should be left on the starboard hand, and Black Buoys on the port hand.

Buoys striped black and white, may be passed on either hand, but should be kept well aboard.

To enter in foggy weather, after passing the Bell Boat close aboard, run in by compass N.W. by N. ½ N. to the first striped Buoy, thence N. by W. ¾ W. till up with Sand Island Light, and thence the course along mid channel to the upper *striped* Buoy is N. ¼ E. From this Buoy, running N.W. ½ N., and passing the upper Red Buoy, we reach the upper anchorage ground of the lower fleet.

After passing the upper Red Buoy, it is well to steer N. by W. ¾ W. till the ship comes to anchor.

Two wooden range Beacons, 20 feet high, have been erected on the East end of Sand Island, and two on Mobile Point. All of them will be lighted at night, and will be visible on and near the ranges mentioned.

The seaward Beacon at Sand Island is painted White, with a vertical Red Stripe on the seaward side. It will show a White Light, and when ranging with Sand Island Lighthouse, it ranges also with the Bell Boat, and the striped Buoy to lead in over the outer bar.

The inner Beacon at Sand Island is painted Red, and will show a red light. Its range with the outer Beacon is the limit of the channel along the West Bank, Northerly from Sand Island.

At Mobile Point, the seaward Beacon is painted Red, and will show a red light. This, in range with the inner one, leads up along the edge of the " East Bank," Northerly from the outer bar.

The inner Beacon at Mobile Point is White, and will show a White Light, and when in range with the Mobile Point Lighthouse, leads to the upper striped Buoy, and through the channel at the West end of the " Middle-ground."

A screw pile Beacon is under construction, intended to mark the shoal at " Revenue Point," near the outer bar.

A Black Spar Buoy has been placed on the South point of " Southeast Pelican Shoal," in 20 feet water, the Eastern woods on Dauphin Island, just on with the East end of Pelican Island.

The Buoy marks the entrance to the "Middle channel," that between Pelican and Dauphin Islands being closed. From the Buoy the course in, over the bar, is N.E. ½ E.

COMMERCIAL IMPORTANCE OF THE RED SEA.

It was remarked by Dr. Buist, in a very interesting paper read recently before the Bombay Royal Geographical Society, as a singular fact that, though the Red Sea is traversed every week by scores of Englishmen, and though vessels of the Indian navy are constantly cruising about in it, or lying at Suez, or at Aden, we know less of its physical geography than we do of that of Siberia, the Ural Mountains, or some portions of the Arctic regions; and while the wilds of South America are being carefully explored, a track of vast importance, associated as it is in our minds with some of the most wonderful events in sacred history, remains utterly neglected. We purpose, therefore, making a few observations on its Geography and Commerce. The Red Sea is 1,280 miles in length, with a maximum breadth of nearly 200 miles, a circuit of 4,020 miles, and an area of 108,154 miles; its greatest depth is 400 fathoms, and the mean depth of its axis about 150 fathoms for about ten miles along mid-channel. The neap tides at Aden and Suez are about five feet, the spring tides about seven feet; and the temperature and saltness of the Red Sea is almost the same as that of the Ocean. The evaporation over its surface amounts to about eight feet annually, which seems to be provided for by a strong inward current from the Indian Ocean—a lower current of the water, thus concentrated, flowing out again through the Gulf of Aden, sweeping around by Scinde, and southward, till diluted by deluges of rain from the western shores of India. Crossing again to Africa, it flows northward, and returns to the place whence it came, to give off fresh supplies of vapour to the rainless districts around.

Mr. Robert Stephenson has proved by survey that the level of the waters of the Mediterranean and the Red Sea are the same. The distance from Suez to Aden is 1,260 miles, and from Aden to Bombay 1,643 miles. Many proposals have been started for constructing a Ship Canal between the Gulf of Suez and the Mediterranean, the cost of which would probably be about one million sterling; but the railroad now forming will probably supersede it for some time to come; in future years, when peace shall have been restored to Europe, such a measure may again occupy public attention. The prospects of a great increase in our commercial transactions with the Presidencies, China, and the Eastern Archipelago, render a ship canal, which would shorten the distance by one-third, of considerable importance. Important, however, as the route to India through Egypt is to ourselves, the southern nations of Europe consider that it promises to be of still greater importance to them. The completion of the various railroads diverging upon Genoa, Trieste, and other Mediterranean ports, and the competition in traffic that will then ensue—the number of French

steamers running, and the earnestness with which the great Austrian Lloyd's Company, possessing a fleet of fifty fine steamers, has thrown itself into the Mediterranean service, and who even contemplate, it is said, placing vessels on the Bombay line—all give earnest of great improvements and increased traffic through the Red Sea. It is but thirteen or fourteen years ago since it was considered impossible that the Red Sea could be navigated by steam-vessels plying between Suez and the East Indies. In 1838, the Bombay Steam Navigation was established through the exertions of Lieutenant Waghorn; and in 1840 the Peninsular and Oriental Company undertook the direct line *vià* Alexandria and Suez, of which it has now the monopoly.

By the irresistible progress of events, fresh facilities are constantly created for expediting communications between the different parts of the globe; and, notwithstanding the occasional opposition of circumstances, the course of improvement appears to move on by some invisible but irresistible impulse.

The Red Sea has hitherto been looked upon as comparatively of no commercial value. The only vessels impelled over its surface for a long period were those bearing the slaves of Massonah to Egyptian harems, or African pilgrims, about 20,000 annually, to the shrine of Mecca. It has now, however, become the high road of communication between England and India, China, and Australia, whether for postal, passenger, or specie traffic. The distance from the Land's End to the nearest Indian port, through the Mediterranean and the Red Sea, is 5,800 miles—whilst the circuitous route usually traversed by sailing vessels in the voyage by the Capé is about 16,000 miles. It necessarily follows, therefore, that those to whom a saving of time is an object, and who can afford the additional expense, avail themselves of what is termed the "overland route." Upwards of £2,000,000 of specie were shipped to India and China in the first six months of the present year, and the shipments frequently exceed £5,000,000 per annum; the amount of bills drawn by the East India Company on the Presidencies for deposits received here is over £3,000,000 sterling; and all the postal communication with the East Indies and Australia now goes through the Red Sea.

Exclusive of the passenger traffic per steamers, the Trade and Commerce of the countries bordering on the Red Sea is larger than is generally supposed. Egypt, Abyssinia, Arabia, Zanzibar, and Muscat, all contribute their quota to its trade. Mocha was formerly the chief port of this sea, bnt it has been rapidly declining in trade and population since Aden was made a free port. Aden, of yore, was the emporium of the Arabian Sea, and, no doubt, will become so again—possessing, like Singapore, many advantages as an *entrepot*, from its peculiar position; and it bids fair to absorb all the trade of Sonthern Arabia. It is a rallying point for the native craft from Cape Comorin to Surat and to Bassorah, and from Suez down to Zanzibar, a resort to the Hadjee vessels of all the Eastern Moslems, and the coaling depôt of the lines of steamers plying between Asia and Europe. About forty ships enter outwards annually from the port of London for ports in Arabia, and four or five inwards.

In 1810 the first American vessel from Massachusetts visited the ports of Zanzibar and Muscat, and soon after also Mocha. The Americans now employ annually about six or seven vessels in this trade, and export 800 or 900 bales of long cloth to Arabia, in exchange for coffee, skins, hides, tortoiseshell, ivory, and other products both of Arabia and the opposite African shores. The balance is paid in German crowns bought in Bombay. The American long cloth has forced British goods out of the Arabian market. The spices, cotton, and cotton fabrics of India are generally in request at Aden, but mostly for transhipment by the coasters and other vessels which are in the habit of frequenting the port for traffic and exchanges, the town itself being too poor and thinly-populated to render its local consumption of any moment.

In Abyssinia, both British and French merchants find profitable markets for many of their manufactures and commodities, for which they receive in exchange the rich and varied productions of the country, including indigenous coffee, equal to the best Arabian. Each government maintains a diplomatic agent at Shoa and Adouah, the capitals of Southern and Northern Abyssinia, and consuls at the outports. There is a large and increasing demand for coarse cotton goods in the interior provinces; they are likewise taken in great quantities into the unknown regions of Eastern and Central Africa, as far as Timbuctoo, by the annual trading caravans which visit the great fairs held between October and April at the Somali ports of Zeilah, Tajomah, and Berbera, on the Gulf of Aden. About 732 tons of gums of various kinds are shipped annually from the Somali ports to Bombay, the Red Sea, and the Arab coast.

With the ports and trading marts of Arabia, in the Hedjaz and Yemen, embracing Tehama, in the Imamat of Sara, on the Red Sea—Hadramant, on the Indian Ocean—Lachsa, on the Persian Gulf—Oman, on the Gulf of Oman—and the extended dominions of the Imaum of Muscat, both in Arabia and on the East Coast of Africa, many openings will yet be found for the profitable extension of British commerce.

The population of the city of Muscat is set down at about 60,000. Its situation is important in a commercial point of view, as it is filled with the merchandise of India and Persia; while the tribes from the interior of Arabia bring in their various articles of traffic to its excellent market. All the ports along the coast are tributary to the Imaum of Muscat, who has subjected Socotra, Brava, Zanzibar, Pemba, Morfia, and several other points along the Eastern Coast of Africa. He also holds Kishma and Ormuz, on the Persian Gulf, and a large portion of the Persian coast around Gombroon. He has a large navy, consisting of many fine English-built teak ships, well armed and manned; and his power upon the Indian Ocean is acknowledged, and his friendship sought, by nearly all the Sovereigns around him. In 1835 the United States concluded a commercial treaty with him.

A large quantity of coffee, but little inferior to the Arabian, is received at Muscat from Persia. The whole produce of coffee in Arabia is about 3,000,000 pounds annually. The culture is principally carried on on the hill slopes of Aden and Mocha, the nearest

plantations being about eighty miles from Aden. Besides coffee and its fine breed of horses, Arabia furnishes various drugs, balsam, frankincense, myrrh, and senna, with aloes from Socotra; dates, and other fruits.

This hasty glance will prove that the most despised spots possess many commercial advantages, and that this greatly-neglected inland sea may furnish, under proper exploration and trade, numerous valuable articles of commerce, as well as marts for European goods.—*Shipping Gazette.*

NEW CHARTS.

Published by the Hydrographic Office, Admiralty, in November, 1854. *Sold by J. D. Potter, Poultry, and Tower Hill, London; and the principal Chart-sellers; also at the various Custom-Houses of the Kingdom.*

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EDWARD DUNSTERVILLE, MASTER R.N.

Admiralty, Nov. 22, 1854.

TO CORRESPONDENTS.—*It is particularly requested that all Communications be sent to the Editor as early in the month as possible.*

Letters partaking of the character of Advertisements cannot be inserted in the pages of the Magazine.

All Communications to be addressed "EDITOR OF THE MERCANTILE MARINE MAGAZINE *care of Mr. W. Foster,* 114, *Fenchurch Street, London.*" *N.B.—The real Name and Address of Correspondents must be given—not necessarily for publication, but as a guarantee of good faith.*

TO OUR READERS.

On bringing the labours of the first year to a close, a few words to our subscribers and readers are rendered necessary.

The introduction of the MERCANTILE MARINE MAGAZINE to the nautical world was an experiment,—and we are happy to add a successful experiment. On its first publication we stated concisely and explicitly the objects for which it was founded, viz.: to advocate the interests of Merchant Officers, and to bring prominently before nautical men, as opportunity offered, everything relating to their profession, so as to promote the efficiency of the Service. By steadily pursuing this course, and by carefully excluding all extraneous matter, the circulation has reached far beyond what the projectors of the Magazine could have anticipated, and being thus much encouraged, they feel gratified in being able to announce that arrangements are on foot which will tend to increase its sphere of usefulness, and place it among the first-class periodicals of the day.

In the future, therefore, our readers may feel assured that no opportunity of improvement will be lost sight of—no new features of interest will be neglected—and matter, at once substantial and important to the class for whom the Magazine was originally started, will be constantly introduced into its pages, by which means it is hoped the support of old subscribers will be permanently secured, and a large accession of new ones found.